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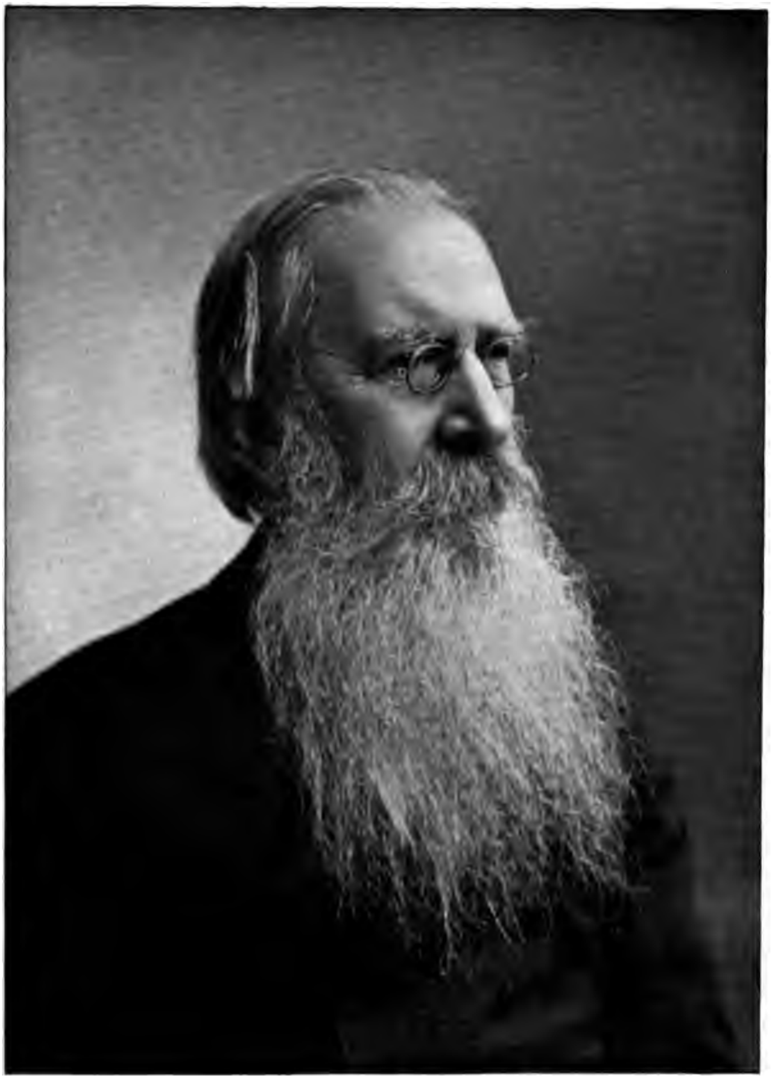

Gardiner Greene Hubbard

DUMB NO LONGER

Romance of the Telephone

BY

FRED DE LAND

ILLUSTRATED

VOLTA BUREAU
WASHINGTON CITY, U. S. A.
1908

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In loving memory of

JOHN HITZ

without whose inspiration

this book would not have been written.

PREFACE.

While studying the history of the evolution of the telephone and of telephone service, the writer wondered why Massachusetts came to be honored as the birth-place of that greatest of all modern inventions, and what influence led the inventor of the electric-speaking telephone, Alexander Graham Bell, to visit that Commonwealth.

The interesting facts that the writer found form a story so fascinating that it is a source of regret that some gifted writer has not framed it in the language it merits, and brought out more fully the interesting details. For they reveal how the earnest efforts of three women paved the way for—and made possible—the consummation of the cherished hopes of the inventor and led to the perfecting of that masterly conception of the theory of the transmission of speech electrically, many years earlier than it otherwise would have been. And to all who aided in bringing about the invention of the electric-speaking telephone at a period when the leaders in physical, electrical, and mechanical sciences either failed to grasp the magnitude of the conception, or believed that while theoretically it was sublime, in practice it would prove of little value, the world will ever owe a debt of gratitude that will multiply as the years roll on.

Briefly, the preliminary steps that led to the invention of the telephone in Massachusetts are the same that won those priceless blessings, speech and speech-reading, for deaf children in America. First, a mother's intelligent and infinite love that would not let her child grow dumb. Second, a young woman's courageous determination that her deaf pupils should not be robbed of the intelligible speech that is the heritage of every child, thus laying the solid foundation upon which now rests instruction of deaf children in speech and speech-reading in America. Third, the invention of a simple system of physiological symbols in which each line and each curve pictorially represent the adjustment of the definite vocal organ to be used in the reproduction of a given sound, symbolical abbreviations that are utilized in many lands in the teaching of languages, and that quickly reveal to the eye of either hearing or deaf child the concealed mechanism of speech. Fourth, a young woman's earnest belief that in Bell's Visible Speech would be found the solution to many of the difficulties encountered in teaching speech to the deaf, and her persistent and insistent demands that it be given a thorough trial in Boston's day-school for the deaf. And, fifth, a father's belief that the latest and best in educational methods were none too good for American children, and that all educational advantages of every character should be open to and available for all deaf children in America.

The writer is grateful to friends who assisted him in gathering facts, and gratefully acknowledges his indebtedness to the writings of others from which he has gleaned statements that may serve or interest some who desire to promote the welfare of deaf children.

F. De L.

ERRATA.

Page 23, line 18.	Substitute *for* for *of*.
" 32, last line.	Omit *school*.
" 32, " "	Substitute *be* for *he*.
" 38, line 4.	" *N* for *S*.
" 38, " 8.	" *G* for *B*.
" 62, " 18.	" *1867* for *1868*.
" 77, " 9.	Omit *W*.
" 127, " 21.	Substitute *telegraph* for *telephone*.
" 149, " 24.	Omit *loss of hearing*. Mr. Dudley's daughter asserts that he did not lose his hearing with advancing age.
" 174, line 6.	Substitute *Schools* for *school*.
" 177, " 33.	" *Educational* for *Education*.
" 178, " 19.	" *twenty-fifth* for *seventy-fifth*.
" 193, " 27.	" *13* for *93*.
" 224, " 24.	" *1870* for *1868*.
" 243, " 10 and 16.	" *Hutchings* for *Hutchins*.

HORACE MANN

CHAPTER I.

SOME EDUCATIONAL CONDITIONS IN AMERICA IN 1860.

In 1860 whatever instruction was received outside of their own homes by children who were born deaf or who lost their hearing in infancy, usually began at an age when many hearing children were nearly ready for the high school. And even this belated opportunity to gain the elements of knowledge could then be secured only through application to the department of charities, and was conferred as a charitable act on the part of a great and supposedly generous Commonwealth, that perennially boasted of the magnitude of its educational gifts to *all* its children. For then there were no day-schools for the deaf, and only twenty-three asylums, institutions or schools for their education, although the census of 1860 records a total of 12,801 deaf-mutes of all ages.

In 1860, just as they do in 1905, public speakers never failed to elaborate on the generous policy of free educational advantages open to *every child* in our American cities, and how the respective states had thoughtfully enacted statutes providing the ways and means for *every child* to receive a common-school education. But these orators omitted to mention that so-called defective children were barred from enjoying these free educational opportunities, and that deaf children were then included among the defectives.

In 1860, if the parents of a deaf child had taxable property, the property was assessed not only to support the public schools which refused instruction to the deaf offspring, but also to support the State institution for the care and education of the deaf, which refused to receive the child until it reached an age when many boys were then leaving school and starting to earn their own living. For it was then considered inexpedient to receive children into State institutions under the age of ten years, and twelve was thought a more suitable age. And after the deaf child was admitted as a "beneficiary" of a generous Commonwealth, its parents were compelled to pay a fixed annual sum of from $200 to $600 for board and tuition, during a period of from five to eight years, or under oath make a humiliating public avowal of inability to pay, or present a certificate of poverty signed by several neighbors.

And no matter how tenderly nurtured the deaf child may have been, or how thoughtful and considerate the officials endeavored to be, on entering the institution the child became an "inmate," was classified as a "mute" or as "dumb," and was catalogued in the same volume in which the State told the world of the evil record of "inmates" of its reformatories, its penitentiaries, and its prisons, and the manner in which it cared for the "inmates" of its asylums for the demented and the insane. Even so late as 1900, the superintendent of one State institution found it necessary to respectfully yet emphatically inform the authorities that "these deaf children are not criminals. There is nothing forbidding or uncanny about them that they should be associated with criminals or mental defectives." And he endeavored to show how great was the economic folly on the part of a State to permit the location of an important educational institution where its occupants would find "criminals on one side, lunatics on the other," where "the land in front is under cultivation all summer, and under water all winter," while in the rear was "a rocky hillside covered with underbrush and pines." But the legislative members could not comprehend the disheartening, destructive influence of environment of the character portrayed, even though they have invited all the world to visit their domain and perceive what marvellous progress has been made—in some other directions.

During the years intervening between 1840 and 1860, spasmodic yet earnest efforts were made to bring about a change in this undesirable condition of affairs, to have the deaf removed from the care of charitable officials and placed under the supervision of the educational authorities, to have day-schools for the deaf, to introduce the teaching of articulation, and to lower the age of admission. In New York the age-limit was ten years until 1838, when it was increased to twelve years, where it remained until 1862, when sufficient influence was brought to bear to secure the enactment of a law permitting admission at six years of age; while in 1892, the minimum age was set at five years.

The inestimable educational value to deaf children in being permitted to enter a State institution at six years of age or earlier—the impressionable, absorptive period of childhood—is evidenced in the records that show that of 1,101 pupils admitted to the New York institution betweeen May, 1818, and January, 1854,"the average age was a little less than fourteen years." And the average period that many institutions were able to retain their pupils did not then exceed five years. Hartford reported that the average age of its first one hundred pupils on admission was eighteen (17.91) years, while the average age of one hundred who entered during the period ending in 1890, was eleven (10.77) years, "a gain of seven years in the right direction"—in seventy years.

In 1860, on reaching the school age, many a deaf child possessed a few home-made signs, crude gestures or unpleasant mutterings, as its only means of communication. Favored and petted in its own home though it might be, yet it was exiled from many of the advantages that other members of the family enjoyed, and true intelligence often dated only from its admission to a State institution. In the words of an instructor of the deaf: "Speech, that mysterious power that unites minds and stirs souls, is to him (the deaf child) unknown. In imitation of those around him he moves his lips and blows his breath. The inarticulate mutterings thus produced are a fair exponent of his mental status. Like the ape, he is skilled in reproducing motions, and people call him bright. He is never intellectually born till, at the age of eight or ten, he is allowed to enter school."

And here are some of the opinions that were held by eminent American instructors of the deaf prior to 1867: "No human condition can be imagined more deplorable than that of the uneducated deaf-mute." "His intellectual condition is little above that of the more intelligent brutes, and lower than the most unenlightened savages." "He is ignorant of general law, either human or divine." "Even those whose friends have made great efforts to communicate religious truths seldom have an idea of the Deity as a creator or benefactor." "No deaf-mute has given evidence of having any innate or self-originating ideas of a Supreme Being to whom love and obedience were due; of a Creator or a superintending Providence; of spiritual existences or of a future state of rewards and punishments." "Whatever else may be true of them, they are without God and without hope in the world." Even so late as 1890, the principal of a State institution for the deaf, stated that "our children come to us with no idea of God, or religion, or duty, and very vague notions of right or wrong."

In 1860, all children started in life without any language with which to express their ideas, just as they start in life today. The hearing child and the deaf-born child had to acquire a language by instruction. Almost from the day of its birth the hearing child was unconsciously being taught to talk through the nearly constant companionship of mother and nurse, of father and friends, of children and relatives. During its babyhood it heard the same words in a limited vocabulary over and over, again and again: "papa" and "mama" and "baby" were heard nearly a thousand times a day, and slowly it acquired the language of its home. But the child born deaf, though endowed with the same capabilities, and just as eager to comprehend what is so easily understood and acquired by the hearing, was cruelly robbed of all educational advantages during its impressionable babyhood days, advantages which were just as truly its birthright as they were the hearing child's.

The hearing child was taught in the language of the home, the street, the shop, the factory, and the office; and on leaving school employment was easily obtained and promotion followed where industry and integrity prevailed. But the deaf-born child could neither talk nor think in the language of its parents, in the language of the people from whom sustenance must be gained in after years. Gradually it was able to make known its wants by a crude system of self-devised or home-made gestural signs.

And, in many cases, this was all the knowledge the deaf-born child possessed on entering an institution. It could not articulate intelligible sounds, because the spoken word had never been heard and the use and purpose of the vocal organs had never been explained; it could not write, not knowing the meaning of written words, and, for the same reason, the printed page remained a meaningless mystery of black and white.

Then, on being registered as an "inmate," the education of the deaf child was undertaken along the lines that sometimes prevented all but the brilliant from achieving success in any but subordinate positions, even though able to read and write. For in place of being taught in the language of the people with whom it must associate on returning home, the deaf-mute was taught to express its ideas and communicate its needs with the aid of a system of conventional or symbolical signs, which in combination with certain bodily attitudes and facial expressions formed what is usually referred to as the sign-language of deaf-mutes. Alphabetical signs were not used, and, being composed of ideographic gestures, movements, expressions, when correctly, gracefully and grammatically rendered, this gestural medium of communication was extremely fascinating with its mimicry and pantomime. Yet these conventional signs formed an arbitrary language, unknown in the shop, on the street, or in society; a language having no literature, "and save to a very limited extent incapable of those nice shades of meaning and the clearness of expression which constitute the charm and value of written language." It was a language foreign to home and friends; "at best a very rude language," and bearing the "same relation to written language that the scaffolding used in the erecting of a building does to the building itself." "The sign-language is a picture-language,—that is all. By it, thought can be conveyed, and at times very clearly; but it can no more contain the difficulties of written language or suggest them than can the painted picture upon the wall."

Some of the conventional signs then used by instructors of the deaf are thus described: "A house is signified by laying one hand alternately over the other to denote its successive stories, and then joining the hands at the top in the form of a roof. This sign for a roof, repeated several times while the hands are moving around as it were over an area, denotes a collection of houses or roofs, i. e., a *town* or *city*. The hands with the fingers running horizontally and somewhat apart, are made to represent a rail fence, and, carried around an area, for a field. The same sign with some amplification, and additional emphasis, expresses the country. The sign for a field, with the addition of the sign for turning the earth with a plowshare (the right hand pushed forward as if it were the share, and turned over as if it were the sod), represents a farm." Dr. Gordon wrote: "To teach the English word 'cat' to a deaf child a sign teacher would show the child a cat, if possible, or a picture of a cat, which would be recognized by the children. The next step would be to direct the attention to the cat's whiskers, drawing the thumb and finger of each hand lightly over them. A similar motion with the thumb and finger of each hand above the teacher's upper lip at once becomes the sign for cat. The instructed deaf child will be expected to recall the object 'cat' upon seeing this conventional sign. The child must learn this sign, from the sign teacher's point of view, before he is prepared to learn the English word 'cat.' After the sign has become familiar, the child is trained to write the word 'cat' on a slate,blackboard,or sheet of paper,and by frequent repetition the pupil associates the word with the sign for cat, so that the written word recalls the gestural sign and the gestural sign serves to recall the idea, or more strictly speaking, the concept, 'cat'."

In some institutions, in 1860, the finger alphabet was also taught, but the sign-language was the prevailing means of communication. The finger alphabet was probably known to the ancient Assyrians, and modern nations have employed it during several hundred years. Dr. Gordon believed that "finger spelling is to the deaf a borrowed art. It was originated neither by them, nor by their teachers, nor is it essential to their education, yet its value can be hardly over-estimated." Every letter in the English alphabet can be quickly made or portrayed by the fingers, while words and sentences can be spelled out upon the fingers as rapidly as they can be written with pen or pencil.

It is of record that in a leading institution in America, during a long period of years, "pupils partially deaf and those who had lost their hearing but retained in greater or less degree their power of speech, were treated in all respects as those born deaf. They were placed, greatly to their mutual detriment, in the same classes and taught in the same manner. Their progress in written language and in other branches of study was good, at times, in several cases, surprising, but no attempt was made to develop or improve their power of speech. No one seemed to think such instruction necessary, the subject was passed over as one of little or no importance, and as a result in most cases the semi-mutes became entirely mute and the semi-deaf totally deaf." And, in 1893, an eminent instructor said: "Twenty-five years ago the statistics of schools for the deaf in America reported but one method of instruction, the manual or sign method. Signs and plenty of them were the only means employed in the development of pupils."

In 1860, and for many years thereafter, this method of instructing the deaf child, now generally admitted unwise from an economic and educational point of view, met the approbation of all who then considered the salvation of the pupil's soul, according to the respective creed of the instructor, paramount to an educational course that might enable the average pupil to enter upon a useful career in commercial or industrial circles. An ability to articulate correctly and to read the lips fairly well might prove of material assistance in aiding the deaf child to become a more helpful member of society. But the ability to comprehend religious doctrine was the goal that every pupil was supposed to strive for in 1860.

In 1848, it was felt that owing to "the truly deplorable condition of the uneducated deaf-mute obviously the first work to be done for him, after his admission to an institution for his benefit, is to open his mind as soon as possible to the great objects, facts, and duties *of religion*. The policy which would defer the communication of these truths, a knowledge of which is so essential to his present and future well-being, to the last stage of his course, and the system of instruction that compels its adoption, *should be rejected for that reason*, if no other existed." In 1849, "articulation as a medium for the instruction of the deaf and dumb," was held to be "an exceedingly difficult, imperfect and uncertain medium *for conveying religious truth* to the minds of those whose ears are insensible to the sound of the human voice....a worse system for the education of the mass of the deaf and dumb can hardly be found." In 1867, some of the leaders in the gestural method of education held that where articulation is the method of instruction, religious worship is utterly impossible. That is, religious *instruction* was not "impossible," but "religious worship is out of the question. The world has never seen an instance where a person would stand up and speak to thirty or forty deaf-mutes so that they would understand him." Yet, even the inspiration of their religion did not keep the teachers in many schools from being "very careless, reckless, and unjustifiable in their use of gestures, and the result was a very unsatisfactory development of the power of idiomatic expression."

Nevertheless, there was always a leaven of progressive educators whose first aim was to save the deaf child from being a burden on society, and who preferred to equip it with the knowledge and the methods of the people with whom it had to compete for existence and from whom it gained its sustenance. Unfortunately those who held these heretical opinions found little opportunity for placing them in practice, or were dominated into accepting approved conventional methods through the tyranny of the majority. In April, 1849, Mr. Luzerne Rae, an instructor in the American Asylum, and editor of the *Annals of the Deaf and Dumb*, in suggesting the advisability of conventions of American instructors of the deaf, said: "It has long seemed to us that the education of the deaf and dumb was yet in comparative infancy, and that new methods would sooner or later be devised which even prejudice must receive as great improvements upon the old. In respect especially to the acquisition of written language, an acquisition the most of all important to the deaf-mute, and yet, one in which he is now preeminently deficient, it has seemed to us that there *must* be some mode of instruction, still hidden in the future, superior to any heretofore employed. We know of no better method to develop and bring into substantial form any such latent possibility, than for the best minds among the instructors of the deaf and dumb, to come together; to destroy each other's errors, and to quicken their diligent search after a more excellent way than any in which they have hitherto travelled."

That same year, 1849, another instructor of the deaf, in pleading for the home education of the deaf in infancy and early childhood, wrote: "... The natural language of signs, uncultivated and intuitive, is but a single advance from the irrational call of brute life.... Any person of ordinary intelligence and skill can learn the finger alphabet of the deaf and dumb, by devoting to it one or two hours' study. When once acquired it is in itself a perfect language.... If the deaf and dumb child learns to use written language first, it will always be to him more natural, more peculiarly his own, than if he learned it as a translation from signs.... It may be asked, perhaps, why the parent should not learn the cultivated language of signs and thus be able to communicate with his deaf and dumb child. There are two reasons against it, either one of which would be conclusive. To learn the language of signs, requires a practice and effort equal to that necessary to learn a foreign spoken language; besides, it cannot be learned from books; it must in all cases be taught by the living teacher. Of course its acquisition would be an impossibility in most families. In the second place, signs, however highly cultivated, are only a secondary language. They cannot be written. They are not an end or an aim in deaf-mute instruction, but only a help, an aid in the acquisition of a more perfect channel of thought."

In July, 1851, the editor of the *Annals*, the official organ of the institutions, said: "Nothing is more common in our schools for the deaf and dumb, than to find pupils who, not having heard any sound for years, are nevertheless able with comparative ease and readiness, to understand whatever is said to them upon common subjects, by merely watching the motions of the speaker's lips. This power is one of great value to the possessor, and we esteem it the duty of every teacher of the deaf and dumb to exercise his pupils in this way, if there are any among them who give promise of becoming even moderately expert in lip-reading."

In 1852, Dr. Henry Barnard wrote: "The experiments which have thus far been made in two or three of our schools, although not conducted by teachers trained in the methods of articulation, and not pursued with that earnestness and enthusiasm which are essential to the highest success, show conclusively that a portion at least of the entire deaf-mute population—that portion who become deaf after the age of four, and, in some cases at even an earlier age—can be taught to give articulate utterance to their thoughts and feelings.... Not only should articulation and labial reading be taught systematically and thoroughly to a class of pupils, but the time has arrived when the course of deaf-mute instruction should be greatly extended,—at least in our oldest and best supported institutions."

In October, 1857, there appeared in the *American Annals of the Deaf and Dumb*, a translation of the report of the inspector-general of the education of the deaf and dumb in Prussia, containing this conclusion, based on the results of many years of oral instruction: "The possibility of speech certainly exists in ninety-nine cases out of a hundred, on the ground of normal organs of speech; the probability of learning it depends, if the sight and feeling of the deaf-mute are good, *only on the skill of the teacher.* .... The art of reading spoken language from the lips is in all institutions of the German school carefully cultivated."

Yet nine years later the leading institution for the deaf in America, specifically stated that "the objections to teaching articulation are inherent in the system, and inseparable from it.... We have no idea that under any circumstances the people of New England or Massachusetts will allow their deaf-mutes to receive only the imperfect education that can be obtained through the medium of articulation. These are not the States to *go backwards to the dark ages.*"

These excerpts from the official organ of the sign schools show how dissatisfied certain American instructors were with the then prevailing methods of instruction; how, fifteen years before the Gardiner Greene Hubbard movement of 1864-1867, all that was needed to bring the oral method into general use in America was a fearless, intelligent, capable leader, with a staff of competent, enthusiastic women teachers, possessed of infinite patience and a thorough understanding of child-nature.

And broad-minded educators in France, as well as in Germany, were also striving to introduce the oral method of instruction in the belief that both the material and the moral welfare of the deaf would be enhanced. Dr. Itard left a perpetual income of eight thousand francs to the Royal Institution in Paris on condition that language, either oral or written, should be the only means of communication between pupils and instructor. And one of the first pupils to benefit by this legacy, and "who became one of the best scholars," was M. Dubois, who, in 1846, had a successful private day-school "for little boys," in Paris, "in which not one single sign, not even spelling with one's fingers" was allowable. Sixty years ago Dubois held that the deaf child refrains from speaking, not because he has lost his hearing, but because no one taught him to talk; that the use of the sign-language should not be tolerated in the education of the deaf; that the instruction of the deaf child should begin in infancy, that the mother was the natural instructor, and that the deaf child should be instructed with and as the hearing child is instructed. M. Dubois lost his hearing at four years of age and was successfully taught articulation and speech-reading in the Royal Institution and by a private tutor out of school hours.

This error in judgment on the part of those to whom the education of the deaf in America had been intrusted, was not in the use of gestures or signs as signs, but in taking the arbitrary attitude that articulation "is a comparatively useless branch of the education of the deaf," that it "is scarcely ever of decided benefit," that it could not be economically taught to the so-called congenitally deaf, that they "cannot derive the least benefit from it," that "our speech is for them absolutely unattainable," and, therefore, that it was "not a desirable course of instruction;" and in permitting to completely supersede the English language, as a means of communication, a system of conventional—not natural—signs which the leading sign advocate publicly announced as differing "from the Chinese language only, or principally in this respect, that the latter forms its symbols with pencil, while the other portrays them by gesture, the attitudes of the body and the variations of the countenance." Another teacher of the deaf declared that "between gesture and the Chinese language there is a difference, very much to the advantage of the latter, which has not only a conversational but a chirographic form, and a classic literature, while gesture has only a conventional form; no books have been written in gestures."

For through this complete displacement by the sign-language of speech and speech-reading in many cases the former became the mother tongue of the deaf-mute, leading it to think, and dream, and dwell in a world of signs, to seek the companionship of the deaf rather than of the hearing, to look upon the English language of its mother as an unknown, a foreign tongue, to find no interest in intellectual occupations, and to be a foreigner to all language and to all people, save the gesture-language and gestures. As one instructor of the deaf sums up the subject: "Education implies vastly more to the deaf man than to the hearing man. The latter is never uneducated in the sense that the deaf man is uneducated. The man who hears may not be able to read or write or compute numbers, but from infancy he has been a student in the busy world about him. He has learned to think, and to reason, and to express his thoughts in intelligible language. All this has been denied to the uneducated deaf man."

In view of these disheartening conditions, is it at all strange that in 1860, there appeared to be no place in the busy world for many "poor dumb creatures" though they were at an age when youth enters manhood and maidens bloom into womanhood? Or that many foreign immigrants could be more helpful, were more welcome and more easily assimilated than the deaf-mute? "They are always foreigners among their own kindred and neighbors—nay, more than foreigners; for our speech is for them absolutely unattainable." Or that many a dumb quadruped was less shunned than the "dumb" biped capable of speech, yet doomed to make known necessary needs with the aid of signs and gestures, or with pencil and paper, because untrained in the proper use of the vocal organs? One State enacted a statute making "deaf and dumb persons idiots in law, and to provide them guardians," thus causing an educated deaf-mute to plead for a change in public sentiment because "we are contemned, spurned, degraded and abhorred." In fact, so complete was the social and industrial deprivation suffered by the deaf and "dumb" in being shut out from all positions of profit and honor, that, in

1860, Congress was memorialized to establish a deaf-mutes' state in the west, because, the memorialist stated, "there is no possibility of putting into effect our powers derived from education, except we could settle some territory out west, have a community of our own; and build up a small state, the government of which, being ourselves (the deaf and dumb) by our management may exhibit our capacities and resources....(otherwise) we have no sufficient chance of evincing capacity."

How marvelously different are the conditions now prevailing in many States. Deaf children are no longer mendicants, and deal not with charitable officials but with boards of education, just as the hearing child does. If its home is in or near a city, the deaf child is regularly admitted to the public school, is assigned to a special class, is taught by a special teacher, and in place of being registered as "defective," or "dumb," or "mute," is simply entered as a "deaf pupil."

Thus hope and aspiration now abide with deaf children, and no longer can even the so-called congenitally deaf claim that "we have no sufficient chance of evincing capacity." For many industries and many professions are now open to deaf pupils who are no longer "dumb," and who have learned not only to articulate correctly but to read speech as it falls from the lips of the speaker; while Harvard and Columbia and other educational institutions count among their graduates students deaf from birth. After graduating from the Clarke School for the Deaf, one of its pupils took the full course and graduated at a technical school in Cincinnati, then won his degree of bachelor of science in the School of Mines in Columbia University, and went to Paris and won the gold medal and a degree at the Ecole des Beaux Arts in Paris, although totally deaf from birth. Another Clarke pupil who graduated in 1873, won the degree of mechanical engineer at Stevens Institute in 1881, while in 1886, a third Clarke pupil received the degree of bachelor of science at the Worcester Institute of Technology.

Depending upon the mental caliber of the children and the age at which instruction commenced, deaf children now in schools or asylums may be divided into two distinct groups, namely: (1) Those who can communicate with others solely by speech and writing. These pupils, it may be assumed, are exclusively taught orally and by writing, all of which implies that they are taught by the pure oral method. (2) Those who can communicate with others by means of either gestures and conventional signs, finger spelling, oral speech, writing, or any combination of these, receive their instruction, it may be assumed, by the so-called "combined system," which embraces two or more of such means of instruction. The sole exception is where the Rochester or vernacular method is employed, in which instruction is given by means of oral speech, finger spelling, and writing, only.

Where a child's education has been delayed, or neglected, or it appears deficient mentally, it is claimed by some that gestures and conventional signs, and by others that the finger alphabet is far more easily taught than the oral method. And under these conditions of slow mental growth the adoption of several methods in combination is probably justified. For there are schools employing modifications or combinations of some or all of these methods. But the consensus of opinion among those who have given the subject the deepest study, both in this country and in foreign countries, appears to be that the oral is gradually displacing all other methods. In 1892, Dr. Gordon wrote: "Though methods and systems may be sharply differentiated, I am persuaded from personal observation, from conversation with instructors, and from a study of the literature of the subject, that the instruction of the deaf is in a state of transition and of progress which renders the shibboleths of the past vague, and of doubtful utility aside from the historical interest which may attach to them. The teaching of language, as the key to knowledge, rightly holds the foremost place in the instruction of the deaf. In this branch, radical reforms are steadily making progress which have not been subjected as yet to statistical inquiry. Subordinate to language teaching, though holding a more prominent place in current thought and discussion, is the teaching of speech." Ten years later Dr. Gordon wrote: "A deaf-mute may be educated without speech; but in this day and age of the world such a one going forth from our schools is an anomaly, and he will always carry the marks of an imperfect education."

The oralists, as a body, are not opposed to the use of any improved methods which will advance knowledge, especially the finger alphabet, as the movements of the fingers represent the letters of the English language; nor do they object to the use of natural signs simply as signs, for all progressive teachers make use of the ordinary signs employed in every day life, to stimulate the minds of children; what they object to is letting an arbitrary language of conventional gestures and signs usurp instruction in articulation and the English language, as a means of communication on the part of the deaf child.

The sign-language and the finger alphabet are easily taught and readily learned, while the teaching of the oral method is one of infinite patience and repetition. Yet oralists claim, that if properly started in infancy or early childhood, oral pupils advance in general knowledge more logically, surely, precisely, and swiftly than those who are instructed in the sign-language or the finger alphabet. And the results obtained appear to substantiate this claim. For the oral method insures a firm foundation of the knowledge that is gained in later years.

Speech-reading or lip-reading, as it is often called, is the art of reading the spoken words that issue from the lips of the speaker. The eye takes the place of the ear and watchfully observes or senses the movement of the vocal organs, just as the ear notes, receives, analyzes the sounds that form the spoken word. Speech-reading is an accomplishment entirely distinct from articulation, and necessarily follows the ability to talk. For to read speech a deaf child must be familiar with the language, and this is generally gained through the aid of writing, as well as instruction by articulation, and, occasionally, with the use of the finger alphabet.

In 1860, the tendency was to promote whatever would serve as a bond of union between deaf-mutes and deaf-mutes, not between deaf-mutes and the hearing. Through the influence of institutional life deaf-mutes were brought together in large numbers, they organized societies of deaf-mutes, published papers and magazines of interest only to deaf-mutes, and, gradually, deaf-mutes began to marry deaf-mutes, though such marriages were rare before the establishment of institutions for the deaf.

Now every effort is being made to discourage segregation, to widely separate the deaf from the deaf and to unite them with the hearing in every way possible, commercially, socially, and industrially; to remove as far as possible every evidence of a defective sense, and to equip deaf pupils with the knowledge that will enable them to compete on equal terms with the hearing. One of the great advantages of the day-school for the deaf is that the child is with the hearing before and after school, at the noon hour and during recess, and thus is constantly brought into contact with many of the conditions it must face on leaving school.

The essential factors that brought about this remarkable emancipation of deaf children from the slavery of the sign-language, and the re-introduction of oral teaching in America were a mother's infinite love and patience, a father's intelligent determination to save his daughter from a fate horrible to contemplate, the development of the requisite abilities in several female teachers peculiarly qualified to successfully promote a pioneer educational movement, and the awakening of leading women in many cities to perceive the fallacy in the theory that children born deaf could not be taught to articulate correctly; in fact, it was essentially "a woman's movement" in many respects, and one in which in this country, women instructors have played the leading part, and borne the brunt of the fight.

Singular as the statement may read, the facts are that back to the deafness that followed the serious illness of a little girl in a lovely home in Cambridge, Massachusetts, in 1862, is traced the primary action that led to the general introduction of oral teaching of the deaf in America, to the founding of institutions and methods that are promoting the welfare of the deaf in all countries, and to a general lowering of the school age of deaf children.

And stranger than the plots and the incidents portrayed in fiction, are the facts that prove how priceless are the blessings that society, industry, commerce, the individual and all the world have gained by reason of the deafness that afflicted that lovable child. For not only was that illness the direct means of immeasurably benefitting deaf children, but one of the effects of that illness was the source of the inspiration that led directly to the perfection of the invention of the electric-speaking telephone by Alexander Graham Bell, in Massachusetts, rather than in Canada, or in England, while a far greater effect was to lead Dr. Bell to make the welfare of the deaf his life study.

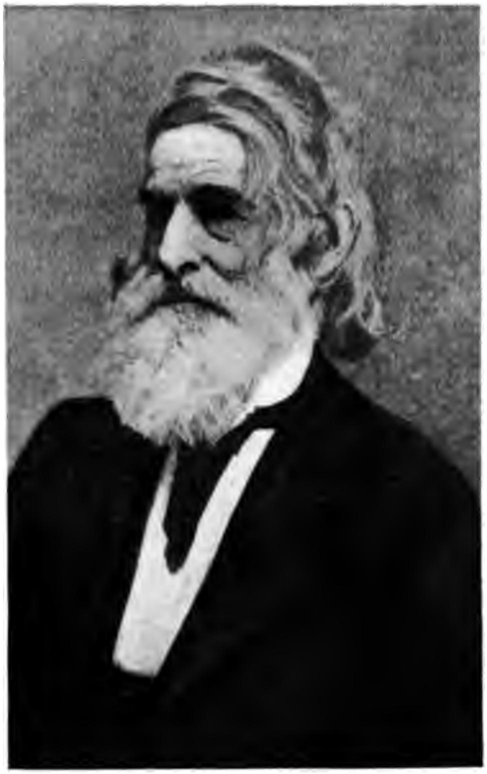
CHAPTER II.

AN ILLNESS OF PRICELESS VALUE.

In the winter of 1862, Mabel, a daughter of the late Honorable Gardiner Greene Hubbard, lost her sense of hearing during a severe attack of scarlet fever. Mabel was then little more than four years of age, she could neither read nor write, did not know all of her letters, and her articulation was exceedingly imperfect, because her parents had not thought it worth while to begin her education until later in child-life.

When Mabel lost her hearing, the physicians claimed that she would shortly become mute as well as deaf, by reason of not hearing speech and thus not being led to talk. When her parents asked what could be done to preserve her speech, for she still lisped and babbled as all very young children do, the reply was: "You can do nothing. When she is ten years old send her to an asylum where she will be taught the sign-language."

Fortunately for all deaf children, Mabel's parents had never been inoculated with the "do nothing" virus, and refused to accept such a conclusion as final or to treat Mabel as a deaf and dumb child. They encouraged her in every way to continue the use of speech, and meanwhile sought the advice of eminent instructors of the deaf. One instructor replied that Mabel would lose all knowledge of speech in three months, and become dumb as well as deaf; that she could not retain the power of speech unless she heard speech. Mr. Hubbard has stated that "our good friend, Professor Bartlett, told us to keep on, and he is the only teacher of deaf-mutes who gave us the slightest encouragement; and he told us he was afraid her articulation would be so unpleasant, even if we preserved it, that we should not want her to talk. We asked if articulation was not taught abroad, and the reply was: 'Oh, yes, but then it is not equal to the language of signs."



SAMUEL G. HOWE

Searching for helpful aids, Mr. Hubbard found a copy of an official report, made in 1843, by Horace Mann, then secretary of the Board of Education of Massachusetts, giving a brief account of the oral method used in the education of the deaf in Germany, showing its superiority to the sign-language, and strongly advocating its adoption in this country as beneficial to humanity as well as to deaf children. Mr. Hubbard also learned that Dr. Samuel G. Howe had accompanied Horace Mann in his visit to the German schools, and turned to him for help. Dr. Howe said that even children born deaf could be taught to speak, encouraged the parents to talk as much as possible to Mabel, and to teach her to read the spoken words from the movements of the lips and vocal organs. He warned them not to use any signs, nor to allow any signs to be used, and never to recognize a sign from Mabel. Later, Mr. Hubbard said: "We knew no signs, not even the manual alphabet; and there is not a single member of my family who knows the manual alphabet today. Our little girl did not know it."

With Dr. Howe's encouragement, and against the advice of many friends who insisted that the parents would not only waste their own time but would rob the child of the privilege and enjoyment of "the beautiful language of signs," Mabel's instruction along the lines laid down by Dr. Howe were patiently and intelligently continued. Fortunately, the parents secured the services of an excellent assistant, Miss Mary H. True, who, "though inexperienced in the instruction of the deaf, was admirably fitted by nature and training for the work."

In later years, Mabel explained how her mother worked, planned, and strove by every means in her power to win back the lost power of speech and to make plain words of love and sympathy; how mother and teacher were "pioneers in a new world of effort," how the growth in the knowledge and use of language and the ability to read speech from the lips gradually came with increasing health: "....I was so young when the illness which deprived me of hearing occurred—it was so severe—my convalescence was so slow, and the consequent mental weakness so great, that I not only cannot remember ever having heard, but cannot even recollect having been in a materially different position as regards articulation and speech-reading from the one I have occupied for so many years.... I presume the reason why I remember nothing of my first steps in speech-reading and articulation is due to the long period of mental and physical feebleness which followed my illness. My mother says that for many months I took no interest in anything and seemed to have no wants to express, and the baby speech I had previously possessed seemed entirely gone. During all that time my mother was working, planning, and striving, by every means in her power, to give me back the speech I had lost, and to make me read her lips. She talked to me long before I cared to talk back, and gradually, I suppose, both language and the ability to read speech came together with increasing mental and physical health. ....I just grew into it naturally—just as a hearing child grows into the knowledge of hearing speech—by perpetual practice. Every one spoke to me—no one made any signs and I cannot remember making any.... The method of instruction pursued was essentially the same as that pursued with my two younger hearing sisters. In fact, we were taught together, and I remember no difference being made between us. Very early books were placed in my hands and I became passionately fond of reading. I did not care to romp and play out of doors, all I wanted was to curl up in some quiet corner and read—all day long if allowed. My father's library was well stocked and I had almost free range. When eleven years old I delighted in reading such books as Jane Porter's 'Scottish Chiefs,' and before I was thirteen I had read through, with intense interest, Motley's 'Rise of the Dutch Republic,' most of Prescott's histories, several large volumes of the Civil War, books of travel, as well as all the stories and novels I could get hold of. We went abroad for three years, when I was twelve, and my mother made a point of giving me all the histories and historical novels she could find of the places we visited.... From the day my mother knew that I would lose my hearing to that on which she gave me into my husband's care, she was working and planning for her child—eagerly seizing every opportunity that promised advantage. Of all the good she did for me the greatest was when she taught me this love of reading and gave me the means to gratify it.

"I have looked back over my life—I have taken apart my speech-reading apparatus—I have thought carefully over all my experiences—and the result at which I arrived is that not only is success in speech-reading dependent upon reading—or, rather, on the extensive and intimate knowledge of language imparted by reading—but that speeech-reading is impossible to any useful extent without it....

"If I needed proof that speech-reading is essentially an intellectual exercise demanding good vernacular knowledge of language I should find it in my experience with German.

"For six months, at one time, I lived in a German boarding school with only one friend with whom to talk English. Before the end of that time I could read German speech by eye nearly as readily as the English, and it was but rarely that anyone had to write off a German sentence for me. This was many years ago, and since then my opportunities for talking and listening to Germans have been few. I find now that when I meet a German friend and try to carry on a conversation in German, I cannot do it at first. I can put together a few German phrases to express my own ideas, but I cannot decipher the movements of the speaker's lips. Why ? I find it is because the German vocabulary at my command is too small to allow me to select from it some words that may be the words my friend is using. I find myself consciously and painfully running over my small stock of possible words, much as a miser over his store of coin, and the chances are infinitely against my having the right word. This would be disheartening but that I have found by experience that by reading German books for a while, steeping my brains in German, as it were, so that I think in German, and see in German, it becomes comparatively easy to catch the German words on my friend's lips."

Referring to this experience of his daughter, Mr. Hubbard wrote, on February 4, 1871: "She went to Germany last May, and for several weeks attended an ordinary day-school, receiving a few lessons in articulation from a teacher in the deaf school at Hildesheim near Hanover, who did not understand a word of English. She now reads and writes German, and converses in that language with her playmates and associates, and there is no doubt that she will soon speak it as well as English."

Thirty years later, Mabel, then Mrs. Alexander Graham Bell, in reply to the enquiry, which she considered the more important, speech or speech-reading, wrote: "I can only say that they both seem to me equally valuable and indispensable. I think, on the whole, I should prefer to attain high proficiency in speech-reading rather than in speech-making, as other people's ideas are always so much more interesting than my own. But the two arts are so connected and interwoven in my mind and usage that I really could not say which is the most valuable to me."

Thomas Hill

CHAPTER III.

THE PROPOSED MASSACHUSETTS SCHOOL.

Observing the excellent progress his daughter was making in speech-reading and feeling confident that he had "selected the better system of education," Mr. Hubbard soon perceived the rich possibilities inherent in this oral method of instruction for improving the welfare of the deaf, and devoted much time to ascertaining what progress was being made in other countries, and how the oral method could best be introduced in American institutions. Thus he learned that it had been tried in New York State during the years 1819 to 1829, and then again following the return of Horace Mann. Hartford had also tried to teach articulation during several terms prior to 1860. But the results were far from satisfactory. Mr. Hubbard read the two reports that Professor Day had written after visiting many institutions for the deaf in foreign countries, the report rendered by Mr. Weld, and Dr. Peet's report, and found little to encourage the teaching of articulation. He secured reports from the German schools and carefully studied their methods, and he learned that instruction in articulation had been recommended in France by the Baron de Gerando, in 1827, and by Dr. Blanchet, in 1851, the latter also advocating day-schools for the deaf where the child would be exercised "in articulation and in lip-reading," his contention being that "the child entering these schools at the age of five or six accomplishes his education at the same time and in company with the hearing children, and he can enter his apprenticeship to a trade at the same time as the others." Mr. Hubbard also learned that for nearly a hundred years instruction in articulation and in speech-reading had been successfully tried in Holland and in Germany. Then why should these methods prove unsuccessful in progressive America? Was it because the instructors had no faith in ultimate success? Because they did not believe it was worth the trouble? Or were "all efforts to accomplish articulation considered useless and wholly abandoned," because, during a period greater than the lifetime of a generation, American instructors of the deaf who admitted that articulation was "the more desirable *were it attainable*," complacently accepted the sign-language, without any comprehension of the merits of better and older systems or of the correct method of teaching these more desirable systems that had prevailed for many years in European institutions.

Thoughtfully realizing that there must be many other deaf children, the majority of whom were less fortunately situated than his own child, Mr. Hubbard generously determined that a school should be established in this country, wherein every effort would be made to preserve and improve the speech of adventitiously deaf children, and where the congenitally deaf could be taught speech, lip-reading and the English language, if the mental condition of the child born deaf made such instruction possible. The finger-alphabet had its redeeming features. But he recognized the pernicious defects inherent in the sign-language—useful as it had proved for many unable to secure other instruction—and clearly saw that as it was used in the institutions it was a means of communication unknown to all but its immediate users, and in no way convertible into the English language save through a cumbersome method of translation; that the employment of gestures and conventional signs tended to segregate their users into a distinct class and to isolate this class of human beings from general society and from many industrial occupations, thereby making institutional life a pleasant part of the existence and obliterating the joy, the comfort and the stimulus of home life and association with the hearing. Thus refusing to believe that Providence ever intended that American children should be so heavily handicapped in their earthly journey, he laid the foundation for more serviceable and more progressive educational methods.

In March, 1864, Mr. Hubbard, Dr. Thomas Hill, then President of Harvard University, Rev. James C. Dunn and others, petitioned the Massachusetts general court for an act to incorporate a school for the deaf in which the oral method of instruction school be used. On March 16, Mr. Robert Johnson introduced a bill in the House, authorizing the incorporation of "the Massachusetts School for Deaf-Mutes, for the purpose of training and educating deaf-mute children," with Mr. Hubbard, Dr. Hill, Dr. Dunn, and three other gentlemen as corporators. This school was to receive from the State the sum of $5,000 annually, in return for which it should "gratuitously board and educate thirty deaf or deaf-mute children when designated by the Governor," and "the Governor was to appoint six of the twelve members of the board." This bill was "referred to the committee on public charitable institutions," which gave hearings for some three weeks, and then reported promptly in the Senate, April 12, that the bill "ought not to pass."

The defeat of the bill was due primarily to the strong opposition to its passage presented by the friends of the sign-language on the ground "that the logic of facts was entirely against the system of articulation," the contention being that "the instruction of the deaf by articulation was a theory of visionary enthusiasts, which had been repeatedly tried and abandoned as impracticable." It is claimed that defeat was made possible by the adverse vote of the chairman of the house committee on appropriations, the Hon. Lewis J. Dudley, of Northampton, who influenced negative action because, being the father of a deaf-born child, then a pupil in the American Asylum, he knew that it was "absolutely impossible to teach speech to deaf-mutes." Whether true, or not, it may be added that three years later Mr. Dudley joyfully and gracefully acknowledged that he had much to unlearn about the teaching of deaf-mutes. And in later years he denied all responsibility for the defeat of the movement in 1864.

The committee made a final report to the Senate on May 11, 1864, which reads: "Another class of our unfortunates are provided with an excellent school for their relief at Hartford. Here we only need to say that this school for deaf-mutes sustains its well-earned reputation. Its corps of teachers is able, and their work is the measure of their success. We see no reason why our Massachusetts children were not as well cared for and educated as if in a school in our own State, and we see no reason that a different policy in regard to the deaf and dumb should be at present adopted.

"We are aware that the two methods of teaching in such institutions here, called the French and German methods, have their warm friends and advocates. At present, the asylum at Hartford is, as it has been, an exponent of the French method, that is, teaching by a language of signs and the finger alphabet. The teachers there have not ignored entirely the German method, that is, teaching by the finger (sic) alphabet, learning to read words by the motions of the lips and actual articulation by the heretofore mutes.

"Which of these methods is the true one we are not able to say. There was evidence before us demonstrating the advantages of the German method when it suceeded in educating well a semi-mute or mute, over that of the French; still it appeared also in evidence that in earlier stages of education it presented almost insuperable difficulties. Still, difficulty has a charm to a resolute soul. No great prize should cease to be attractive because there are difficulties in the way of its attainment; hence we are satisfied the German method is worthy a long-continued and most thorough experiment. We are not prepared to recommend an appropriation in answer to the petitions of those interested in a school here, taught by the German method. The present condition of our State finances did not warrant the expense of such an experiment, and yet we hope private benevolence here will prosecute it, and we would respectfully suggest to the trustees at Hartford that a still farther and more thorough trial of this method might, under their hands, be more *successful,* or at least forever settle the comparative merits of these different systems of teaching the deaf and dumb. The object is worthy the effort, as restoring to society and all the enjoyment of social life those whom Providence has bereft of a sense of hearing and the power of speech."

The advocates of the sign-language believed that they had won a great and final victory, and were correspondingly elated over the outcome. Had they understood human nature better and had they studied Mr. Hubbard's characteristics, as emphasized at the committee meetings, the sign-teachers would not have ignored the recommendations of that committee, but would have made as great a success in articulation-teaching as an aroused public sentiment forced them to do ten years later. Nor would they have failed to perceive that in place of this report being a decisive victory, it was only the opening skirmish in a struggle in behalf of deaf children for freedom from the slavery of the sign-language, and for the preservation of speech, and that it was a contest which would never cease while Mr. Hubbard had strength to plead for the rights of helpless, speechless, deaf children.

Victory for the sign-schools though it was, it only serves to emphasize the revolution in methods of instruction that dates from Mr. Hubbard's temporary defeat. For, notwithstanding the tenor of the committee's report and so unexpected a reception of his philanthropic efforts to benefit helpless deaf children, Mr. Hubbard's ardor was in no wise diminished, but rather stimulated to renewed effort. And as the passing months and returning health showed an ever developing improvement in Mabel's ability to readily converse with her friends, he determined to furnish the members of the legislature with a practical demonstration of the feasibility of his plans to benefit the deaf, by opening a school for deaf children at his own expense, if other support was not forthcoming.

CHAPTER IV.

THE CHELMSFORD SCHOOL.

Public interest in the oral method had been awakened by the favorable evidence submitted to the committee, and this led Mrs. James Cushing to seek a teacher for her daughter Fanny. Fortunately, through the friendship of Mrs. Mary Swift Lamson, who had instructed Laura Bridgman and Oliver Caswell, both blind as well as deaf, she found an instructor in Miss Harriet B. Rogers, of Billerica, possessing the admirable qualities needed in this pioneer educational movement, and to whom Fanny was confided on November 7, 1864. Miss Rogers had never taught a deaf child, but she was a successful teacher of hearing children, and her sister, Eliza, had been one of the instructors of Laura Bridgman.

Then she was fortunate in meeting Mrs. Henry Lippitt, of Providence, whose daughter had lost her hearing at four years of age. Although the child's speech had faded away until only two words remained, it had been revived and improved by the watchful care of the mother. Jeanie was then twelve, "spoke fluently, and had advanced nearly as far in education as other children of her age." Mrs. Lippitt told Miss Rogers that, following an attack of scarlet fever, "Jeanie lost her hearing at the age of four years and three months. The loss was instantaneous and entire, hearing when she fell asleep, and never having heard a sound since she awoke. She was five years old when I first commenced teaching her the letters of the alaphabet, none of which had ever been taught her. She had lost all knowledge of forming sentences, although she remembered the names of some things; for instance, she remembered the name of a key, and also of the

HARRIET B. ROGERS

THE CHELMSFORD SCHOOL AND CHURCH

pronoun *you*, and by showing her a key and pointing to herself, (you), we obtained the sound of *q*, which we had tried ineffectually to get for weeks, and also the sound of *k*; these consonants being the most difficult and the last that she learned. We used no means except articulation from the commencement, being particulary directed in this by Dr. Howe."

From some newspaper clippings Miss Rogers secured a helpful description of the method of oral instruction employed in the Berlin school; but she admits that she did not comprehend the full value of lip-reading until she conversed with Jeanie Lippitt. And while success crowned her efforts as an instructor of the deaf, Miss Rogers realized long before the year expired that she might as well teach more than one pupil, and explained this situation to her friends. But she thought it would be a useless expenditure to advertise for pupils; for the general public knew so little about this oral method of teaching speech to the deaf, and there was so much opposition to the method on the part of teachers of the sign-language, that she felt an advertisment offering to teach the deaf and dumb to talk and to read speech, "would be considered a hoax unless the public could be convinced that such teaching had already proved successful."

Thus it came about that Mrs. Lamson arranged a meeting at her home on Tuesday, November 7, 1865, at which Miss Rogers met Mr. Hubbard, President Hill of Harvard, the Rev. Edward Norris Kirk, Dr. Samuel G. Howe, and others.

At Mr. Hubbard's request, Miss Rogers had brought her only pupil, Fanny Cushing, with her, and thus was enabled to show what progress had been made with this first pupil. So convincing were the evidences presented, that Dr. Kirk drew up the following statement which was inserted as an advertisement in one Boston paper that evening, and later in other papers:

"CERTIFICATE.

"The subscribers have witnessed the examination of a child, nine years old, a deaf-mute under the instruction of Miss Harriet B. Rogers, who entirely substitutes the voice or articulation for the sign language. From the results of this experiment we feel authorized to recommend Miss Rogers and her method, and to encourage her in forming a class.

Thomas Hill.
Edward S. Kirk.
John D. Philbrick.
Henry M. Dexter.
James C. Dunn.
Gardiner B. Hubbard.
Lewis B. Monroe.

(See advertisement in another column).

Nov. 7."

Under the heading "Boston & Vicinity" appeared:

"We ask the attention of those interested in the instruction of Deaf-Mutes to the advertisement of Miss Harriet B. Rogers. We have heard of some wonderful stories of her success in teaching this class of unfortunates, stories which are so well authenticated as to command belief of them."

The advertisement read:

"PRIVATE INSTRUCTION FOR DEAF-MUTES.

"Miss Rogers proposes to take a few deaf-mutes as pupils, for instruction in articulation and reading from the lips, without the use of signs or the finger-language. The number is limited to seven, two of whom are already engaged. Immediate application must be made to Harriet B. Rogers, North Billerica, Mass.

"*References.*

Thomas Hill, D. D., President Harvard College.
S. G. Howe, M. D., Superintendent Institution for the Blind.
Edward N. Kirk, D. D.
John D. Philbrick, Superintendent Public Schools.
Henry M. Dexter, D. D.
James C. Dunn, Esq.
Gardiner G. Hubbard, Esq.
Lewis B. Monroe, Professor of Elocution.
James Cushing, Esq., 101 Devonshire street.
Mrs. Edward Lamson, 5 Beacon street."

Notwithstanding so exceptionally high an endorsement, so strong was the prevailing unbelief in the possibility of instructing deaf-children "in articulation and reading from the lips, without the use of signs or the finger-alphabet," that seven months passed before a sufficient number of pupils were engaged to warrant the opening of a school.

Finally, on June 1, 1866, two years after Mr. Hubbard's petition was defeated in the legislature, he had the satisfaction of seeing a little home or family school for the deaf established in Chelmsford, four miles south of Lowell. Miss Rogers was installed as principal and Miss Mary Byam as assistant. Only three pupils were enrolled on the first day, two more were engaged to follow in a few days, one came in September, and two more the following spring. Petty as these details now seem (when, for instance, in Chicago, in 1903, there were fifteen day-schools in which two hundred and twenty-two deaf pupils were taught only through speech and speech-reading), they accurately portray some of the discouraging conditions that "Mr. Hubbard's visionary movement" had to face in those early days. For this Chelmsford school was *the first regularly organized school for the deaf in this country in which only the pure oral method was taught.* And had it not been for the intelligent and never-ceasing efforts Mr. Hubbard put forth and his indomitable perseverance, the general introduction of oral teaching of the deaf might have been delayed for many years. And possibly the telephone would have been invented under other skies and only become generally known many years after the Centennial.

While Miss Rogers had eight pupils in the spring of 1867, only "two were paying full price, and Mr. Hubbard raised about a thousand dollars to help carry on the work," Mrs. Henry Lippitt, Mr. Talbot, Mr. Francis W. Bird, Mr. S. D. Warren, and others subscribing. Miss Rogers has written: "Mr. Hubbard, from the very first time that I saw him, was always helping me in every way possible. I could not have opened the school in Chelmsford without him." Not only did Mr. Hubbard aid Miss Rogers financially, but he devoted much time to making her school an educational success, in supplying whatever would promote the value of the instruction, and in winning friends for the oral method of teaching the deaf. For he fully realized the importance of the experiment he was making, and how rich in blessings to deaf children the outcome might prove. Success would assure speech to the deaf and the English language would come through speech; failure meant for the deaf child preference for life in an institution in place of a home, and a strange vernacular of signs and gestures in place of the satisfying, comforting language of kith and kin.

By reason of its novelty and the opposition this method of teaching the deaf aroused among the advocates of the sign-language, several notices of the Chelmsford school appeared in the Boston papers. These notices led officials of institutions for the deaf, in other States, to visit the school to perceive how the seemingly impossible was brought about. Some of these visitors thought the method was wasteful of time and money; while others highly appreciated the value of the new system of instruction and gradually introduced it in their respective institutions.

In shrewdly locating her school in a charming but isolated village, distant from any railroad, Miss Rogers may have realized that, were the school easily accessible, curiosity might influence the captious to censoriously comment on "the chicanery" that enabled so reputable a teacher to lead educators of acknowledged standing into believing that the "dumb" were actually taught to articulate correctly. At Chelmsford no time was wasted in useless discussion with hide-bound believers in the efficacy of gestures. Yet a cordial welcome was extended to sign-teachers who could do their own seeing, their own hearing, their own thinking, and were honest seekers after light and truth. One teacher returned home and explained that while the oral method was directly against all reason, and in all probability would never succeed, still deaf-born pupils were actually conversing intelligently in Miss Rogers' school, and thus it would be wise to give the method a trial.

The comments of a few principals were not of so friendly a nature. The Rev. John R. Keep stated that "the filing of a saw, and the shriek of a steam whistle combined, could not produce a more disagreeable sound than that which is made in *some* of these artificial attempts at speech by the deaf and dumb. Knowing that their voices are so disagreeable, is it to be wondered at that they should be unwilling to carry on their intercourse with others by means of speech.... If all signs are excluded, where articulation is taught, as it is claimed they are in the small school recently opened in Chelmsford, then we may say that however great the attainments of the deaf child may be in articulation, his *mind will still be in darkness.*"

Contrast that last sentence with the statement made five years later by Mr. Sanborn, at the close of the Clarke (Miss Rogers') school year in 1882. Mr. Sanborn said: "Articulation is our method, and intelligible speech is one of its results, but we hope to show you, by the exercises of today, that the mental training, the presistent study and reading pursued here, give also that more important result of general education, from which, until within a hundred years past, the blind and the deaf were almost wholly cut off, and which can only be acquired in its fulness, by the use of that wonderful instrument of divine power—human language. Such merit as our system of instruction possesses is derived from the use we make of words, and from the fact that our pupils pursue, though with slower steps, the same path which has led the wisest men and the wittiest women to wit and wisdom."

Perhaps it is only fair to add that in 1871, Mr. Keep, like many other instructors, placed on record his belief that the sign-language did not possess the educational merits previously accredited to it, because "trains of reasoning are not at home in signs. It is a beautiful and most expressive language, but not wide in its range. The range is that of partially developed minds, of children. There is, of course, a wide gulf between such a language as this and the cultivated and refined language of the world...."

Yet only when we grasp the full significance of the almost unlimited power and influence in moulding public opinion wielded by those ministerial educators of the Stone, Turner and Keep type, do we begin to realize how great a moral courage was required to publicly oppose educational methods that they approved. The public had been deluded into believing that the sign-school had attained unto perfection in the education of deaf-mutes, and thus was easily influenced into believing that the establishment of an oral school was not only an economic as well as an educational blunder, but was criminally unjust to the pupils who would be consigned to its care. Not only did the advocates of the sign-language control every avenue leading to legislative or municipal action, but the charge was openly made that "funds given by the general government for the common cause of the education of mutes, were used to prevent the establishment of what might possibly become rival schools."

Alex. H. Bullock

CHAPTER V.

MR. HUBBARD'S SECOND PETITION.

In 1866, Mr. Hubbard again prepared a petition to the legislature for a charter for a school for the deaf, but before presenting it called, in company with Lieut.-Governor Talbot, a brother-in-law of Miss Rogers, on Governor Bullock in the hope of enlisting his support. To Mr. Hubbard's great surprise the Governor informed him that he had received an unexpected message that morning from a gentleman offering to donate $50,000 to a school for the deaf, provided it should be established in Northampton. In his annual message, the Governor laid this generous offer before the members of the Legislature with a sympathetic recommendation that the initial steps be taken to provide a school for the deaf within the Commonwealth of Massachusetts.

When the appointments were made, a joint special committee, consisting of three members from the Senate and seven from the House, was detailed to investigate the whole subject of "the education of deaf-mutes." This committee thoroughly studied the question, gave impartial hearings to both sides, and visited the American Asylum and the Chelmsford School. Its first public hearing was held on January 24, 1867, and the last on Tuesday afternoon, February 12.

At the first meeting Mr. Hubbard explained to the committee how his daughter lost her hearing, how her mother had faithfully striven to save the child's speech, how he had aided Miss Rogers in establishing her school and then said:

"The views that I have been led to adopt, from watching my own child, and watching the progress made in this school, are these: (1) That some deaf-mutes can be taught to articulate who are congenitally deaf; that is, those who have never heard. (2) That those who at an early period have lost their faculty of speech can be taught to articulate. (3) That those who preserve some portion of their hearing can also be taught to articulate. (4) That all, without great difficulty, can be taught to read from the lips.

"And another point to which I have been brought is this: that, as a general rule, wherever articulation is taught, the use of signs or of the manual alphabet should be entirely discarded. The fact that there have been in this country a few children taught to articulate is well known to the gentlemen from Hartford. That they have been taught abroad, more or less, is also admitted by the gentlemen from Hartford. We understand that they think that in Europe the teaching of articulation has not been carried to any great success, and that in the few cases where articulation has been taught with any degree of success in our own country, as in the case of my own child, and in the case of Miss Lippitt of Providence, it has only been done by considerable expense; and that it would be impracticable to teach articulation to deaf-mutes, as a general rule. From my own knowledge of the school at Chelmsford, I think the teaching can be carried on principally by females, and that so the cost of instruction can be very greatly reduced, so that the same number of scholars could be probably instructed with very nearly the same expense as at other institutions. It does not require any particular art or skill in the teacher to instruct deaf-mutes. That I know of my own knowledge. It requires patience and constant application. And I know this, too, from the education of my own child, that the more that child is brought into connection with children that talk and hear, the greater is her progress. And my belief is that if she had to be in an asylum with deaf-mutes, she would soon lose all her faculty of articulation and of reading from the lips. She now plays with all the little girls, and goes to dancing-school, and, after a little while, it is our intention to send her to other schools with other children. I have thus stated that there were three classes of deaf-mutes who could be, in my opinion, taught this method of articulation. These three classes embrace, I believe, from one-half to three-fourths of the entire number of deaf-mutes in this Commonwealth; so that there are, therefore, a large number who could be reached by this particular method of teaching articulation. And it has therefore seemed to me that it was a plan which was to be thoroughly tried by this State, that we might see whether articulation could not be taught to these three classes. I think, from my own observation, that the two methods of instruction,—that is, by the use of signs, and by articulation,—cannot be carried on together. One must be taught to the exclusion of the other. Therefore it is not well to send a child who can talk, or who can hear somewhat, to the school at Hartford, where the sign-language chiefly is used to communicate instruction.... So far as signs are concerned, if you undertake to teach a child signs and the manual alphabet, you are, I think, undertaking to teach a child two languages; and I think it is hard enough for a person who has all his faculties to learn two languages at once. I should therefore confine the child to one language. I think, also, that if you undertake to teach the manual alphabet and articulation at the same time, you distract the attention of the child, and it would be more difficult to teach a child the manual alphabet than it would be otherwise...."

Concerning Miss Rogers' school Mr. Hubbard said:

"We think that you will not find, when you visit the school at Chelmsford, that the pupils there have learned less than those instructed the same length of time at Hartford. But, gentlemen, we do not wish that you should have any great expectations with regard to what you will see at Chelmsford. At Hartford they have fifty years the start of us. They have teachers who have had a life-long experience in the art of teaching this particular class of scholars; they know how to teach better than we do, and the instruction there cannot be compared with that at Chelmsford. This is a new school; neither of the teachers had any experience in teaching deaf-mutes before they began their little school. You may not be able, probably will not be able, to understand a single word that any one of the articulating scholars speaks; they may not be able to read a single word from your lips; and yet it is the beginning, we hope, of great things. We think you will find that these children, considering the infancy of the undertaking, have made some progress in learning. We think you will find that they have made a start, and that their future progress will be greater than it has been.

"What definite, what practical plan do we propose for the education of deaf-mutes? It is this, gentlemen. That you shall give to some gentlemen who will make the necessary application, a charter for the purpose of establishing one or more schools in this State for the instruction of deaf-mutes. That charter being granted, we propose to ask that the State shall make the same appropriation to scholars who may desire to go to these schools that they do to those who go to Hartford. We do not wish to begin on any great scale. We have no objection to having the age limited at first to those from five to ten years. We propose to continue the school now at Chelmsford, where semi-mutes and semi-deaf people, and those congenital deaf-mute children whose parents may desire to attempt their instruction in articulation, may be sent. Then we propose to open another school at Boston, where other deaf-mutes may be taught, perhaps by the language of signs (for we will not object to using any system by which we can teach the deaf-mutes, although I do not myself believe in the language of signs,) but using more the manual alphabet than signs. Then we propose to establish another school, if you please, in Northampton. Beginning in a small, humble way, we wish to see if we cannot teach these semi-mutes, if we cannot, by beginning at the early age of five years, restore articulation to those who have lost it, and fit them for some higher school—fit them, if you please, for Hartford; but, at any rate preserve for these young semi-mutes, their powers of articulation."

Mr. Hubbard's efforts were ably seconded by Dr. Samuel G. Howe, Mr. Frank B. Sanborn, Lieut.-Governor Talbot, and others, while they were strongly opposed by a greater and more influential number who appeared to carry every influence at the start, and who insisted that Mr. Hubbard's views were contrary to all practice and all reason, that every experiment he suggested had been tried and failed, and that only the impracticable was offered. The Rev. Collins Stone, the principal of the American Asylum, in referring to articulation, said:

".... The gentlemen who have instructed deaf-mutes are perfectly familiar with it. They have considered it over and over again, and right in the face of all these instances of success which gentlemen have brought forward, the instruction of deaf-mutes wherever they are taught the English language, is carried on just as we carry it on now. They have brought forward nothing new at all. These very things we have met time and time again. At first, it was the general impression that these children should be taught entirely by articulation; it was supposed that there was some mysterious power in human speech. The first advocates of articulation had this idea; that you could not teach an idea by a written word or by a sign, but only by the vocal utterance of words. That was Heinicke's theory. Subsequent experience has shown that all that amounts to nothing; that we can just as well and just as distinctly teach ideas by signs to deaf-mutes as by vocal or written words. That was the Abbe de l'Epée's method, and the foundation of his system. But Mr. Braidwood, of Edinburgh, adopted this system of articulation. He was the most accomplished articulator the world has ever seen.... The fact is, that the schools in England and Scotland, without exception, embracing the opinions of Braidwood, commenced teaching the deaf-mutes to articulate, supposing that was the only way. The fact also is, that after giving this system a long, faithful and conclusive trial, they have abandoned it for the system of l'Epée—teaching the deaf-mutes by their natural language, the language of signs. It is very evident that Englishmen will never copy anything that a Frenchman does unless there is a very good reason for it; but this system they did adopt, and now there is no single institution in England that teaches articulation, except the London institution, and it is well known that a very large number of their pupils do not learn articulation.... We have investigated this subject five different times. In the first place, Mr. Gallaudet, whose life shows him to have been a man of keen mind and practical judgment, in introducing a system of instruction into the country, selected the method of signs. He saw what articulation could do at Edinburgh and London. When he was there, the schools were taught entirely on that system. He also saw what the instruction was in France; and although there was some difficulty in regard to his obtaining a knowledge of the system pursued in England, yet if he had perceived that that was the way to instruct the deaf and dumb, there was no difficulty that would not have been overcome. He would simply have been obliged to spend some little time in a school in England as a scholar, and he would have done so cheerfully. But he saw the system of signs was much more effective, and selected that. He went on under that system for some years, and succeeded in educating a large number of deaf-mutes in a manner satisfactory to them and to their friends.... We hold, and we find by experience, that it is vastly more profitable to spend the time which our friends use in teaching a child to talk, to reproduce the sounds of the language, in teaching him ideas and cultivating his mind. This labor of teaching a child to talk is very great, and does nothing at all towards cultivating the mind of the child. It must be gone over with each individual. Sometimes day after day is spent upon one sound, and when the child is supposed to have learned it once, you have got to go over it again. It is labor simply on this artificial point—articulation. On that ground, if a child has lost his articulation entirely, and cannot hear at all, we hold that there is a better way of teaching him than by trying to teach him to talk. .... Until our friends can show us a generation of articulating deaf-mute children who can communicate as easily, and can go about and do their business as well, as these young men (the Hartford pupils), I think in fairness they ought to allow that they are mistaken in their notions.... The views of these gentlemen are right in the teeth of the experience of all practical teachers. Every experiment that has been suggested has been tried and failed; and these are only the old questions over again.... Our teaching is constantly by signs. *We do not pretend to teach by articulation.... We have no class in articulation....*"

Rev. W. W. Turner, the former principal of the American Asylum, said:

"We can never make hearing and speaking persons of these deaf-mutes. We can give them a measure of vocalization, imperfect to be sure; we can teach some of them to pronounce, parrot-like, words something in the way we do: but we cannot make them understand the use of vocal language, with its articulation, its emphasis, its point. *It never has been done, it never can be done....* In all the experience that we have had at the institution, no parent has ever brought a deaf-mute child to the institution—one born deaf, or who had lost its hearing in infancy—with a vocal language. Never has a parent established communication with such a child, even in the slightest degree, orally. No perseverance of the mother,—and we know how anxious mothers are that the little one shall speak,—no repetition of *mamma, papa, good boy, nice boy,* has been able to make the deaf and dumb child produce any vocal utterance in imitation of what the mother has said, so as to establish a system of communication between them, and enable the mother to make her wishes known to the child and to ascertain the wants of the child. It never has been done. No teacher in this country nor any other can cite an instance like that; but in nearly all cases, (I will not say in every case,) this other language of which I have been speaking, the language of signs, has been used as the medium of communication between the parents, and the brothers and sisters, and the deaf-mute child.... Articulation has never been a part of the regular system of instruction of the deaf and dumb, and *I hope never will be,* for I am firmly convinced that it is a comparatively useless branch in the education of deaf-mutes. In no case is it the source of any original knowledge in the mind of the pupil; in few cases does it succeed so as to answer any valuable end."

Mr. Sanborn presented letters from prominent deaf-mutes, all favoring a change in methods of instruction. Mr. Amos Smith, a deaf-mute educated at Hartford, and who delivered the address at the fiftieth anniversary of the opening of the American Asylum, wrote:

".... This sign-language tends more than anything else to form the mutes into a special class....it isolates them from the hearing and speaking world.... I would have them taught *more* of written language, and let signs be one of the unknown tongues.... I would have the child trained to habits of self-reliance which he now so sadly lacks under his present treatment."

Mr. John Carlin, a graduate of the Pennsylvania Institution, a deaf-mute poet of distinction, the orater at the dedication of the monument to the Rev. Thomas Gallaudet, "a miniature painter of decided merit," and who " in recognition of his high attainments as a writer, and of his earnest devotion to letters, was invited to deliver an address at the public inauguration of the National Deaf-Mute College at Washington, D. C., in June, 1864, and was on that occasion made a master of arts, this being the first instance of the conferring of a degree by the new college," wrote:

".... True, there are many mutes who are remarkably well educated, and write with rapidity and grammatical accuracy: but it must be remarked that their superior attainments are attributed not to the boasted excellency of the system of instruction but to the uncommon brightness of their minds, and their industry and diligence in study, more particularly *after their graduation.* It must be borne in mind that the number of such is by no means great. At the school hardly over five out of two hundred pupils are annually found familiar with the principles of the English grammar, and the rest are more or less deficient in written languages. This is a stubborn fact, and one indeed far beyond dispute. Now, it may be asked how this deficiency is caused, and I can safely answer, by *their excessive use of signs, always encouraged by their teachers,* who declare, no doubt honestly, that the sign-language is the deaf-mutes' natural mode of communication.... Seeing that the old system, both educational and religious, has taken root so deeply in the old institutions that any new system could not be fairly tried by them, Massachusetts is earnestly urged to become the pioneer of the new way for her mute children to the desired goal, and I am sure that the other States will follow her noble example by establishing *new* and *better institutions.*"

Mr. Sanborn presented letters from other deaf-mutes, and at the closing session handed in a series of resolutions unanimously passed at a meeting of deaf-mutes, held in Boston the previous evening, favoring instruction in articulation, and reading, in part, as follows: "That the early education of deaf-mute children is regarded by us as of great importance, and we would earnestly favor any plan by which these children could be taught as other children are in schools in their own neighborhood."

In concluding, Mr. Sanborn made an eloquent plea that Massachusetts educate her deaf-children in small schools established within her own borders, citing individual cases of instruction in articulation and presenting statistics to substantiate his argument. Dr. Howe, Mr. Talbot and others also made addresses and urged action along lines similar to what Mr. Hubbard had suggested.

Referring to the Chelmsford School, the committee reported:

"Miss H. B. Rogers, who has a private school for deaf-mutes at Chelmsford, having signified a willingness to give any information in her power to the Committee, was asked several questions, in reply to which she said:—In my school I have not been able to test how many pupils can be taught articulation at one time. My pupils are all of different capacities, and have been brought to me one at a time, except in one instance, when I had two pupils brought to me, one a congenital mute, and the other, one who lost his hearing at five and one-half years of age, and had been deaf two years. He had no means of understanding others, but remembered to talk. Of course these children had not had the same opportunities, but they neither of them understood anything from the lips. The little boy who became deaf at five and a half years old, spoke, perhaps, four or five words; I remember he knew the words 'father' and 'mother.' One young man came about three weeks after that, who lost his hearing when seven years of age, but remembered to talk; and two other children, one a little girl of five, and the other a little boy of eight, came near together, but there was such a difference in their ages that they could not be taught at the same time, so that I have had no opportunity to test the question how many can be taught together. I have seven pupils in all, and teach by articulation entirely. I have one assistant. We are obliged to be mother and nurse, as well as teacher, and that care is much greater than that of teacher. Four of the pupils are together in arithmetic adding numbers. I see no reason why, in a class like that, ten or fifteen could not read from the teacher's lips at once. When I begin to teach articulation, I teach each child separately, as in the common schools. There you must point to each letter, and ask each child separately what it is. You must pursue the same course with the deaf. I can teach several to pronounce the sound of a letter at once; I do not know how many, because I have never had an opportunity to test it.

"The congenital deaf-mute I spoke of knew nothing of articulation—he had never articulated a word. He came the first day of June last. I placed him before me and breathed upon his hand, and taught him to breathe upon it. When he could do that, he had the power of the letter *h*. The first day I gave him the power of five letters, but he could not articulate either of them aloud. The second day, I think it was, he articulated one or two of those letters aloud; and the third day I taught him his first word—*pic*. He repeated it many times before he made an audible sound, but he did once or twice that day repeat the word audibly. He knew four words when he came to me, as I have stated, when he saw them in a book, and he could also write his own name, and knew it when it was written. He did not know the letters of it, but imitated his name when it was set for a copy; and I do not know but he could write the names of two or three of his family at home."

Asked if she made use of the finger-alphabet, Miss Rogers replied:

"I see no reason for the use of my fingers, if there is perfect communication between me and the pupil. I do not need to use my fingers to tell a child how to pronounce; I cannot do it to nearly so good advantage as with the lips. If the child is familiar with the different sounds of the alphabet from my lips, I can give the pronunciation of a word with them; but it is very difficult to give the pronunciation of a word with my fingers. I tested this somewhat when I took the little girl I have had with me two years. She lost her hearing when she was three and one-half years old, and the only word she could articulate when she came to me was the word 'boy.' That was all the communication between us. I thought this would afford me an opportunity to give articulation a fair trial. I knew nothing of it, except that it had been tried abroad; but I thought that what had been done abroad could be done here. I visited a lady in Providence who had taught articulation to her deaf child, got what information I could from her, and went home. I found, after the little girl had been with me two months, that the finger language was so much more definite than reading from the lips, that she was not satisfied unless the finger alphabet was used, and that the two systems could not be used together. I then took her and went to visit her parents, and told them they must decide which system they would choose. My preference was for articulation. They decided upon articulation. Then, just as soon as she could make any articulate sound for the words she had learned on the fingers, I obliged her to give up the manual alphabet, and now she knows nothing of it."

The Chairman: "Do you agree with Dr. Howe, that you would teach the manual alphabet as supplementary to articulation?"

Miss Rogers: "I should have no objections, after the child was well taught to articulate. There are times when it is convenient to use the finger language, and I see no reason why it is any more objectionable for a mute to know the finger language than any other person."

Mr. Dudley: "Do you use the pen or pencil at all?"

Miss Rogers: "Never to give instruction. There is no necessity for it. If we teach a child a new word, we teach him to write it at the same time."

The Chairman (to Miss Rogers): "You would not use the manual system, because you think the pupils would then give less attention to articulation, not because you could not educate them quicker by uniting the two systems?"

Miss Rogers: "I do not think you could educate them so quickly, because their attention would be distracted. With the system of articulation, their attention is fixed entirely upon the lips; they have no connection with the hand. If both systems were taught, they would be thinking of both, and I think it would divide their attention, and they would not advance so rapidly."

On March 1, 1867, the committee visited Miss Rogers' school at Chelmsford, and appeared pleased with the many evidences of progress presented. Yet the general sentiment was probably mirrored by the correspondent of the *Boston Daily Advertiser*, who wrote:

".... Miss Rogers, the founder of the school, is a young woman of marked ability—a cultivated, patient, untiring enthusiast—who believes in her system and does not believe in failure. .... There are only six pupils under her charge.... This admirable teacher should be sustained and encouraged; but it may well be questioned whether the evidence yet produced warrants any radical change of method...."

One point brought out by Mr. Hubbard was that the original plan on the formation of the school at Hartford, was to have the oral method adopted. He said: "Mr. Gallaudet, who was the originator of the institution—one of the best men, probably, that ever lived, but, as was said by one of his oldest friends, 'a good, rather than a great man; deficient in boldness and originality,'—was sent abroad for the purpose of becoming acquainted with the system of instructing the deaf-mutes. He went, in the first place, to Dr. Watson's school, London, where the system then taught was articulation. He applied for admission in order to learn their system, but was refused. He then went to the school at Edinburgh, where articulation was also taught, but where they would not receive any persons whatever as teachers. He was, therefore, cut off from these articulating schools, and was forced to go to Paris, where the system of De l'Epée and Sicard was in operation, which was the system of signs. It was, therefore, by an accident entirely that he went to Paris, and was instructed in the method of signs."

To this statement Mr. Stone replied: "I think Mr. Hubbard is slightly mistaken. Mr. Gallaudet was not forbidden to acquire the method practised in England, but certain restrictions were placed upon him which were not agreeable. They did not object to his learning the system and bringing it to this country, but he would have been required to spend a certain length of time in the institution. If he had thought that system the best, he would have submitted to the requirement."

In this connection it is interesting to note that the first funds contributed by the sixty-six original subscribers, in May, 1815, "for the purpose of defraying the expenses of the Rev'd Thos. H. Gallaudet to Europe, that he may acquire the art of instructing the deaf and dumb in an institution to be established in the town of Hartford," were probably given on the understanding that "on his return" there would be established "a school for the exclusive purpose of instructing the deaf and dumb, in the various ways which the nature of the case will admit, and prepare them for usefulness in this life." An appeal to the public was made through an editorial which appeared in the *Connecticut Mirror,* May 22, 1815, and copied in full by the *Hartford Courant,* in its issue of May 24, 1815, soliciting "the pecuniary aid of those who are inclined to promote the proposed object." Therein it was clearly stated: "However much it may surprise those who are unacquainted with the subject, it is a fact capable of the most satisfactory proof, that the deaf and dumb in Europe have been taught not only to read and write and understand written language with accuracy and precision, but, in some cases, to understand spoken language, and to speak themselves audibly and intelligibly." And to clinch its argument in favor of the proper education of the deaf, the editorial closed with "an extract from an account of the London Asylum for the deaf and dumb," reading, in part: "Visitors may there see children in all the progressive stages of mental improvement....acquiring with the use of language, a participation in the comforts of social intercourse and in the consolation of Christian hope."

Yet four years later, in the third annual report of the American Asylum, dated Hartford, May 15, 1819, it was stated that "the mere improvement of the pupils, however, in intellectual knowledge has formed but a part of the plan which the principal and his associates, together with the superintendent and his lady have pursued. The original design of this Institution was to make it the *gate to heaven* for those poor lambs of the flock who have hitherto been wandering in the paths of ignorance, like sheep without a shepherd.... It was necessary to send abroad for a knowledge of the art of instructing the deaf and dumb. This art must be communicated to others. It must in some measure be accommodated to the peculiar structure and idioms of our language. All this demands new teachers, time, patience and labor. .... *Articulation is not taught.* It would require more time than the present occasion furnishes, to state the reasons which have induced the principal of the asylum and his associates not to waste their labor and that of their pupils upon this comparatively useless branch of the education of the deaf and dumb. In no case is it the source of any original knowledge to the mind of the pupil. In few cases does it succeed so as to answer any valuable end...."

Not only was it understood in the inception of the movement to establish an asylum at Hartford, that the deaf would be taught speech and speech-reading, but the same belief prevailed among those who promoted the public meetings, held in 1816, "to consider the propriety of establishing a school for the deaf in New York City." At "the fifth meeting of citizens held January 14, 1817," a long report was read which was published in full in the *Commercial Advertiser*, of January 18. In part, that report reads as follows: "The Committee appointed by the public meeting of citizens held on the sixth of December, 1816, at the Mayor's office, for the purpose of obtaining information respecting the number of deaf and dumb in this city, have made diligent inquiry on the subject, and are enabled to report, that forty-seven persons of this description have been ascertained to be in the city.... Such persons should not be called dumb, since, in the common acceptance of the word, they would be considered incapable of instruction, which is far from being the case.... With respect to the manner of teaching them, your Committee have made some inquiries, and are satisfied of its practicability. There are two methods which have generally been adopted—the first teaches them to write, read and understand; but, in order to communicate their ideas, significant signs are employed, by which the deaf can converse with one another with great intelligence—but, to be understood by others, and understand in return, the communication must be written.... No person unacquainted with these signs, can hold converse with them.... The other method of teaching the deaf and dumb embraces the whole of the advantages of the first, and superadds that of speech.... How far it may be practicable to teach the deaf and dumb to speak, your committee cannot pretend to say—but, from the whole view of the subject, they would respectfully recommend that measures be immediately taken to establish in New York a school for their instruction—and which is submitted in behalf of the committee.

John Stanford, Chairman.
Sam'l Akerly, Sec'ry."

The first report of the New York Institution, 1818-1819, dated January 1, 1820, contains a valuable report from Dr. Samuel Akerly, dated December 23, 1819, covering his investigations into the cause of deafness of sixteen male pupils, his treatment in each case, and his conclusions, that while seven were hopelessly deaf, six "have their hearing improved, and are in a fair way with practice to use spoken language"; one "will be cured of ulcerated ears, though his hearing may not be restored," and in two cases "some hopes are entertained, and their hearing will be improved." In other words, this report of good Dr. Akerly shows that in the inception of the movement to educate deaf children in New York, the oral method was employed, female teachers were employed, and systematic efforts were made "to ascertain the actual condition of the organs of hearing," just as Mr. Hubbard endeavored to bring about fifty years later, and then met with the most strenuous opposition from the representatives of these very schools.

In December, 1816, following the public meetings held in New York, the establishment of a school for the deaf was advocated in Philadelphia. One writer in Poulson's *American Daily Advertiser,* of December 14, 1816, after referring to the action taken by the New York committee, quotes Dr. Johnson's indorsement (1773) of Braidwood's Academy in Edinburgh: "There is one philosophical curiousity to be found in Edinburgh which no other city has to show—a college of the deaf and dumb, who are taught to *speak,* to write, and to practice arithmetic by a gentleman, whose name is Braidwood.... They not only *speak,* write, and understand what is written, but if he that speaks looks towards them, and modifies his organs by distinct and full utterance, they know so well what is spoken that it is an expression scarcely figurative to say, they hear with the eye...."

Then this advocate continues: "Does not the above statement most incontrovertibly prove the importance and necessity of establishing in this city (as proposed) an institution which shall teach the deaf and dumb to understand vocal speech and to utter articulate sounds, thus restoring them to the pristine dignity of humane nature, and re-integrating them in their proper condition as intellectual beings; an institution which shall instruct these unfortunate objects of an enlightened benevolence in the improved manner now pursued by Dr. Watson, of Edinburgh?

Would not such an establishment be worthy of a city which has done so much to promote and patronize the arts and sciences?"

Admitting that these details have no direct bearing on the action of the committee appointed by the Massachusetts legislature, they are of interest in indirectly showing how completely the sign-schools had, in 1860-1867, impressed the public in general and the legislatures of the respective States contributing to their support, that the only proper method of instructing deaf-children was in the use of the sign-language, and that it was a waste of time and labor to teach articulation.

Incidentally it may be added that full details of the inception of movements in Hartford and New York, to educate deaf children, will be found in the invaluable "Historical Notes Concerning the Teaching of Speech to the Deaf," contributed to the ASSOCIATION REVIEW by Dr. Alexander Graham Bell. (See Indexes of Volumes II, III, IV, V, and VII.)

While awaiting the report of the committee, Mr. Hubbard prepared a pamphlet of thirty-six pages bearing the title, "The Education of Deaf-Mutes: Shall it be by Signs or Articulation?" This pamphlet was printed in Boston and generally distributed to all the influential journals, organizations, etc., in New England, and is said to have been instrumental in arousing public sentiment in favor of a thorough trial of the oral method. The chapter headings in this pamphlet are: "How Signs were introduced into this Country," "The American Asylum," "Sign Language," "The Hartford Test Applied at the School of Miss Rogers in Chelmsford," "Articulation," "Early Education of Deaf-Mutes," "Number of Deaf-Mutes," "The Articulating School of Miss Rogers," "Conclusions." Under date of March 29, 1867, the Boston correspondent of the *Springfield Republican* refers to this pamphlet, stating that "Mr. Hubbard defines and describes the different methods of teaching the deaf-mutes, and gives some amusing instances of the inefficiency of the Saxon language. He does not speak so hopefully of the success of Miss Rogers as he might do—perhaps because he would avoid the appearance of exaggeration—but the details that he publishes are very satisfactory."

CHAPTER VI.

How the Women Helped to Win.

In after years, Mr. Sanborn, while publicly recounting the difficulties that Mr. Hubbard faced "when the sign-schools had possession of everything in America," said:

"The teachers of the sign-schools themselves, having tried speech, as they said, and some of them having done so honestly, had decided that the oral method in America was impossible. They even went so far as to say that it was dying out in Europe, which, of course, was a mistake. They had possession of all the means of instruction, they held all the avenues of approach to legislative bodies; but they had, as all privileged bodies are apt to do, made one mistake—they had *omitted women from their system*."

An influential member of the committee of 1867, was the Hon. Lewis J. Dudley of Northampton, who, as a member of the legislature is said to have cast his influence against the granting of Mr. Hubbard's petition in 1864. Mr. Dudley's only child was a deaf-mute who had received instruction by the sign language at the American Asylum and was considered "one of their brilliant pupils"; for "the advantages of the sign-method were all displayed in her case." At that time Mr. Dudley was so thoroughly imbued with the false beliefs regarding articulation for the deaf which then permeated all circles of society, that he openly declared that he would not have his daughter taught speech, because, he said, "her voice would be so disagreeable to me and to her mother that we should feel worse than we do now. I won't have her instructed by this new method."

Fortunately for Theresa, Mrs. Dudley, although not believing that children born deaf could be taught speech and speech-reading, had earnestly striven to teach her daughter without the use of signs, and with the aid only of the manual alphabet and writing. That is, Mrs. Dudley "had used only the English language," as Miss Rogers has stated, "in order that Theresa might acquire an extensive vocabulary and English idiom; that during her two and a-half years' instruction by signs at Hartford her mother was constantly talking with her in alphabetic language out of school, so that when Theresa began the study of articulation her knowledge of language and its proper use was far superior to that of a majority of pupils."

Mr. Dudley visited the Chelmsford school and observed the progress the pupils were making. In answer to his questions whether speech and speech-reading could be taught to his daughter, then thirteen years of age, and who was born deaf, Miss Rogers replied that experience only could tell. Mr. Dudley was skeptical of permanent beneficial results, but Mrs. Dudley and Theresa remained in Chelmsford for a few days, spent much time in the school and Miss Byam taught Theresa two or three words. Returning a few days later, he was greeted with a word of welcome by the very child whom he had declared in 1864, never could talk because she was born deaf. A few years later (in 1870) Mr. Dudley said: "She was sent to the school to learn to read the lips, and I had no more idea that she would learn to talk than that I should receive the gift of tongues! She had a pet bird by the name of Fanny which would obey her behests in a marvelous manner. When she had been in school about three weeks she came into the parlor one day and said to her parents, with perfect distinctness, 'I can say Fanny!' Saul of Tarsus was not more surprised by the voice from Heaven than were these parents. Here was something from Providence! Here was a possibility for congenital deaf-mutes! Here was a lesson for a skeptic, and such I had been. I had almost ridiculed the idea of teaching a child born deaf to talk, and I had spoken in terms not over-respectful of certain men whom I regarded as visionary, utopian, and wild. I ceased to be a skeptic, not to say a scoffer, and began to side with Providence. My daughter went on to talk. Where, for thirteen years, there was perpetual silence, there is now perpetual music."

And, in October, 1868, Harvey P. Peet, eminent as an accomplished instructor in the sign-language, after visiting Clarke school, wrote: "Miss Dudley is a rare and peculiar instance of success in teaching articulation and labial-reading to the congenitally deaf. She had been taught through signs and the manual alphabet for a considerable time at home, by Miss Edwards, a graduate of the American Asylum, by Miss Blauvelt, a graduate of the New York Institution, had been two years at the institution at Hartford, and had been under instruction by articulation at the Clarke Institution a little over a year. Her articulation was labored and slow but intelligible. I saw and heard her converse with her mother at a distance of ten or twelve feet, and in a manner to be understood. When it is considered that she was thirteen years old when she came to school, having previously been taught to articulate a few words only, her case certainly presents one of the most remarkable examples of success in teaching articulation, I ever heard or read of. From some rare peculiarity of temperament and mental organization, *she seems to prefer speech to signs.*"

Crystallized in that last sentence is the delusion that appeared to have taken possession of every educational institution in the country, when Mr. Hubbard began his battle for speech and speech-reading as a medium of instruction for deaf children; and it was reflected in the reply of a leading instructor of the deaf, when conversing with Mr. Hubbard's daughter: "But she will lose this beautiful language of signs."

Concerning Miss Rogers' school, the committee reported as follows: "If anything would have induced your committee to become partisans, it would have been the success of Miss H. B. Rogers, who with her assistant, Miss Byam, has been for a few months conducting a school of six or eight pupils at Chelmsford, teaching only by articulation and lip-reading. She has a native energy, and an enthusiasm for a new work which does not recognize the possibility of failure. A visitor has said: 'Her strong faith and her determination to succeed render what would, under other circumstances, prove the severest drudgery, a labor of love.' The attainments of the children in the few months that they have been under her care are surprising and encouraging. Her success is another proof of a truth which our late war has developed, that woman has more energy, tact, perseverance and capacity than have heretofore been acknowledged."

There remained other opponents to win over. So the late Mrs. Josiah Quincy, then residing on Park street, sent out several hundred invitations to a reception at her beautiful home. Many of the members of the legislature were present in the drawing-room when Miss Rogers, at the request of Mrs. Quincy, gave several illustrations of the proficiency attained by her pupils, causing the members to marvel at the miraculous results. Then a spirited conversation was carried on between Roscoe Green (of the Chelmsford school) and Jeanie Lippitt (of Providence, taught by her mother), both entirely deaf, concerning such happenings in the cities of Newport and of Providence, as children of thirteen and fourteen would be interested in. The members could desire no better proof of the fallacy that speech would in no wise benefit the deaf, for they beheld these young people conversing in the same manner as hearing children. Mr. Sanborn states that this conversation so ingenuously planned by women, "won fifty votes in five minutes."

Under the date line of Boston, March 29, 1868, C. L. B., the correspondent of the *Springfield Republican*, wrote:

"Much has been said in the newspapers, and more in private circles, of late, about the singular experiments and gratifying success of Miss Rogers, of Chelmsford, in teaching the dumb to speak; but nothing had prepared the public in general for the extraordinary exhibition which I have just been witnessing in the drawing-room of Mrs. Josiah Quincy. This lady, always interested in good works, today opened her house to the pupils of Miss Rogers. (It was) attended by hundreds of ladies and gentlemen, State officials, members of the Legislature and of the city government, clergymen, teachers and votaries of social science. These were the spectators; the objects of interest were the six pupils of Miss Rogers, mostly young children, and the two charming girls, one from Cambridge (Mabel Hubbard), the other from Providence (Jeanie Lippitt), who had been taught in the same manner, (at home). Jeanie Lippitt is now fifteen, perfectly deaf, and yet able to carry on a conversation with her own family almost as rapidly as hearing children do. I never saw anything more interesting than the chat she had with Roscoe Green, a lad of eighteen who lost his hearing at the age of seven and who has been taught to read the lips by Miss Rogers within the last eight months. They sat eight or ten feet apart, talked and laughed about Providence, (the home of both), Newport, the iron-clads there, the studies of their schools, the pleasures of vacation, etc. Neither of them could hear a word, neither of them used a sign or a letter of the finger alphabet, yet they read from each other's lips the 'small talk' of young people as fluently as they had read more serious things from the lips of their teachers and friends. The younger pupils of Miss Rogers spelt words and sentences, wrote them from dictation, counted the numbers above a hundred, ciphered out little sums on their little slates, and went through the whole of the pretty gamut of their school attainments —not hearing a word, nor using the sign-language or the finger alphabet, but reading everything from their teacher's lips. There seemed to be but one voice among all who were present that the undertaking of Miss Rogers was a most praiseworthy and successful one, and ought to be encouraged by the community and the State. As the honest country members wiped their eyes, I fancy they saw more clearly what was their duty towards a Massachusetts woman struggling against many obstacles to give her unfortunate pupils the best instruction their condition will allow. Their skepticism melted away as mine did."

By request, Mrs. Hubbard appeared before the committee with Mabel, and in reply to questions stated that she endeavored to keep Mabel "with other children, as much as possible; that Mabel went to dancing-school with other children, took part in all their games, and her own desire was to be with other children and like other children as much as possible; that since she had been in the Senate Chamber she had asked why the deaf-mutes did not speak with the lips as she did, for she thought it was a great deal better to talk with the mouth than with the fingers; that the children of the neigborhood played with her as pleasantly and happily as possible, they understanding her and she them, she making no more signs than other children do, so that it often might be difficult to select the deaf child; that, at the time she lost her hearing, she did not know all her letters, and pronounced very few consonants, that their children had all spoken very imperfectly, a little girl younger than Mabel, five years and a half old, not pronouncing the letter *s* at all; and Mabel's pronunciation was quite as imperfect before her sickness."

In after years, Mabel in stating that "at that time the deaf were truly dumb—extraordinary beings whose sometimes graceful, more often uncouth gestures and facial contortions made them in public places objects of curiosity, sometimes of pity, at others of ridicule; always things strange and apart," said: "I well remember my own feelings of awe, not unmixed with horror, when I first saw some of these strange people. I was then a little deaf child myself, between whom and the inevitable doom of becoming like these, there stood nothing but a father's courage and determination and a mother's infinite love and patience. But for these my fate had been sealed."

Mabel's governess told the Committee that she "never saw a deaf-mute until she saw this little girl; she had had Mabel from nine to two every day, with four other children, who had learned their lessons and recited them entirely separate from her, and she had not devoted any more time to her out of school than to any other child; that she repeated the Lord's Prayer in concert with the other children every morning, and in the exercise of singing, although she did not sing, she repeated the words at the same time with the other children."

Several questions in arithmetic and geography were then asked Mabel, "which were answered promptly and correctly, and with a bright, intelligent expression of countenance. She also read a short passage from a school-book, and answered some simple questions in history."

Mr. Hubbard submitted a letter to the committee from Miss A. M. Ireson, one of the public-school teachers in Cambridge, who had been requested to examine Mabel. Miss Ireson was entirely unacquainted with the Hubbard family, and Mr. Hubbard said, "had never been to our house before the day she came to make this examination of our little girl." She wrote: "I have been exceedingly interested in examining little Mabel, and I am happy to say that she will compare very favorably with children of her own age, and is somewhat in advance of the average of those of ten years, (Mabel is nine,) who have come under my instruction. I am surprised at the readiness with which she reads from the lips, as I have never talked with her before, and she understood the questions without difficulty."

Mrs. Horace Mann contributed many details of visits to schools for the deaf which she and Mr. Mann had made in Germany, and aided in other ways, both directly and indirectly.

Through Miss Rogers, Mrs. Lippitt presented a detailed account of the method she adopted in teaching her daughter Jeanie, who lost her hearing at four years of age, writing: ".... We used no means except articulation from the commencement, being particularly directed in this by Dr. Howe. Although now speaking well and pleasantly, she improves in distinctness and fluency, as we observe ourselves, and as our friends remark to us, who meet her occasionally. Her studies at present are arithmetic, English history, geography, grammar, composition, physiology and reading. The last I mention because it is a study in articulation, and of great importance to her. We allow for that study one hour each day. In arithmetic, she has passed through, understandingly, simple proportion of Greenleaf's, and has commenced compound. In grammar, she is parsing in Paradise Lost. In composition, her standing is fair. She has just commenced Goodrich's History of England; has studied the history of the United States. These studies she has pursued alone with her teacher, reciting verbally, of course. The study of physiology she has recently commenced at a private school, (which she has attended for some time for drawing, writing and gymnastic exercises,) in a class of twenty girls, many older than herself, and is doing well, understands the teacher's explanations, answers any questions put to her, and is able to read upon the lips of the young ladies a good part of their recitations.... Perhaps you would like to know that she is able to make herself a great favorite with her companions, being sought constantly, and we are obliged to decline all invitations for her for any days except Friday evenings and Saturday, on account of her studies, and that with all these young people with whom she associates, she communicates *only with the lips.* If any account of Jeanie can induce any one to attempt this very much improved mode of teaching deaf persons, in preference to the old system, I will at all times be most happy to furnish any facts."

CHAPTER VII

THE COMMITTEE'S REPORT.

Four months after its first public meeting, the joint committee reported to the Senate, on May 27, 1867, that most of the "committee had entered upon the investigation almost entirely unacquainted with the methods of deaf-mute education, and therefore comparatively free from predilections.... The testimony annexed will show the radical difference of opinion in regard to the two systems, entertained by those, throughout the world, who are most versed in the instruction of mutes; and the controversy has been going on between them more or less for two centuries. The large attendance at the hearings, and the comments of the press in and out of the State, exhibited an unexpected public interest in the question."

The committee found that for nearly fifty years Massachusetts had been sending her deaf children to the American Asylum at Hartford, 515 in all, "of whom 486 received aid from the State," and that Massachusetts then had 101 children there, or nearly one-half the total number then at the asylum. "With the exception of one year, aid was confined to pupils between fourteen and twenty-five years of age until 1843. In that year, it was extended to pupils from eight to twenty-five, and so continues. The term, except in special cases, was limited to four or five years, until 1843, when it was increased to six years, its present length. In 1853, the governor was authorized to extend the term two years to not exceeding six pupils to enter the high class." The average annual appropriations for the four years, 1864, to 1867 inclusive, for an average of ninety pupils from Massachusetts, was $15,000, or $167 per pupil.

"Your Committee find the deaf-mute pupils of the State included among the 'dependent classes.' In this connection they desire to say, that the policy and practice of the Commonwealth is, to give every child an education, and attendance upon school is compulsory between certain ages. No exception is made as to his ability or infirmity, and the doors of a school are open in every district to every child. But the teacher, representing the State, finds at the door a deaf-mute child, whom he is incompetent to teach, or to whom he is unable to devote time enough to teach. His heart is full of sympathy, and he says to the child: 'God has denied to you the power to acquire our system of education, or rather, has denied to me the ability readily to adapt our system to your infirmity, or to inaugurate and carry out a system fitted to your necessities. But you have a right to an education, nevertheless.'

"The Commonwealth recognizes this right, but says: 'While it is neither economical nor convenient to teach you at home, we must not deny to you the privileges accorded to other children, and will send you to an institution adapted to your necessities'; and so the child becomes a 'ward of the Commonwealth.' He is a ward, just as much, and no more, than any other child attending a public school. True, it may be said, we 'support' the child during his term at the Asylum; but need we do so if we educate him as we do other pupils, at his own door? His parents would then provide for him as they do for their other children. For our convenience, and for economy's sake, we adopt a special course to educate him. The parent pays his portion of the school tax. We deprive him of the society of his child, loved the more because of his infirmity, but we ought not longer to call that child a charity pupil.

"With these views, as the care of the Commonwealth over her deaf-mutes seems to be for purposes of education, and not of support, your Committee will recommend that they be hereafter under the supervision of the board of education, who have charge of the educational interests of the State.

"This recommendation grows out of the views heretofore indicated, and of the frequent complaint that this class of pupils are now associated in an annual report with the paupers, criminals and charities of the Commonwealth. But we desire most emphatically to state, that we intend by this recommendation no reflection upon the board of state charities, who have hitherto had this care.

"We trust we shall never forget what the chairman of that board, Dr. Howe, has done for Massachusetts, for the world, in his devotion to the interests of suffering humanity everywhere. We would not dim the lustre of a noble life by even an apparent criticism. He disclaimed before the Committee any intention of being connected with a new institution of deaf-mutes if it be established; but in what he has done in this work we believe he has been influenced by the demands of duty, the welfare of the mutes and the best interests of the State.

"And we are glad to recognize the constant devotion of the secretary of the board, Mr. Sanborn, to a service which few would undertake, and in which few would find success. His laborious research in the field, not readily accessible, which is now under consideration, deserves especial notice. He will be willing to wait for the future to do justice to what he has done and is doing....

"Your Committee are entirely agreed, that deaf-mutes should have an opportunity for earlier education than is now afforded at the Hartford Asylum. The two younger classes there now average eleven and twelve and a quarter years. While the managers of that institution believe that home influence is best until a child is eight years of age, we are by no means certain that they would not consent to receive younger pupils, if our State did not limit the term to six years...."

The Report concludes: "Your Committee recommend the passage of the accompanying Bills, which provide: (1) For the incorporation of an institution for deaf-mutes at Northampton. (2) For the primary instruction of younger pupils than are now received at the American Asylum. (3) For a longer term of instruction than has heretofore been allowed to pupils aided by the State. (4) For an additional appropriation to enable the governor to answer the existing applications of pupils requiring State aid. (5) For the supervision by the board of education of all deaf-mute pupils aided by the Commonwealth."

When the report was read its adoption was fought by an opposition so strong, that had a vote then been taken, the measure might never have passed, but at that moment Mr. Lewis J. Dudley arose, explained how he had opposed Mr. Hubbard's movement in 1864, because, being the father of a deaf-born child he then believed that it was "absolutely impossible to teach speech to deaf-mutes"; but now she has been taught a few words; and he said: "I sent her to Hartford; she was carefully educated; I have nothing to say against the method of instruction. But whereas once she could not speak now I hear her voice." He told how his faith was awakened in the possibility of deaf children being taught to speak, through observing Jeanie Lippitt and Roscoe Green conversing at Mrs. Quincy's reception, and portrayed the advantages that deaf children would gain if instruction could begin at an earlier age. Then he forcibly answered every objection advanced by the opponents of the bill, described and contrasted the condition of his daughter, Theresa, with Mabel Hubbard's condition, detailed the pleasures and profit that his daughter would gain from speech, and plead so earnestly with his colleagues to support a movement that was certain to prove of immeasurable benefit to deaf children, and that would enable fond parents to hear the voices of their children, that "there were few dry eyes in the house" when he closed; and several members who intended to oppose the bill "found it impossible to do so after Mr. Dudley's speech."

"Warrington," the correspondent of the *Springfield Daily Republican*, in May, 1867, in referring to the passage of the bills, wrote:

"The question of the education of deaf-mutes was very deftly managed, and the result is very much to be rejoiced over. There was a latent opposition to the ideas of the reformers, which threatened to take a theological turn and to become very formidable. The bills reported by the committee would doubtless have passed, in spite of all the opposition which could have been mustered, but the speech by Mr. Dudley, of Northampton, one of the most pathetic and eloquent that I ever had the good fortune to hear, settled the question in the House, without any great delay, and both bills passed with scarcely a dissenting vote."

The bills were approved on June 1, 1867, the charter was granted, and a wonderful and far-reaching victory was won for humanity.

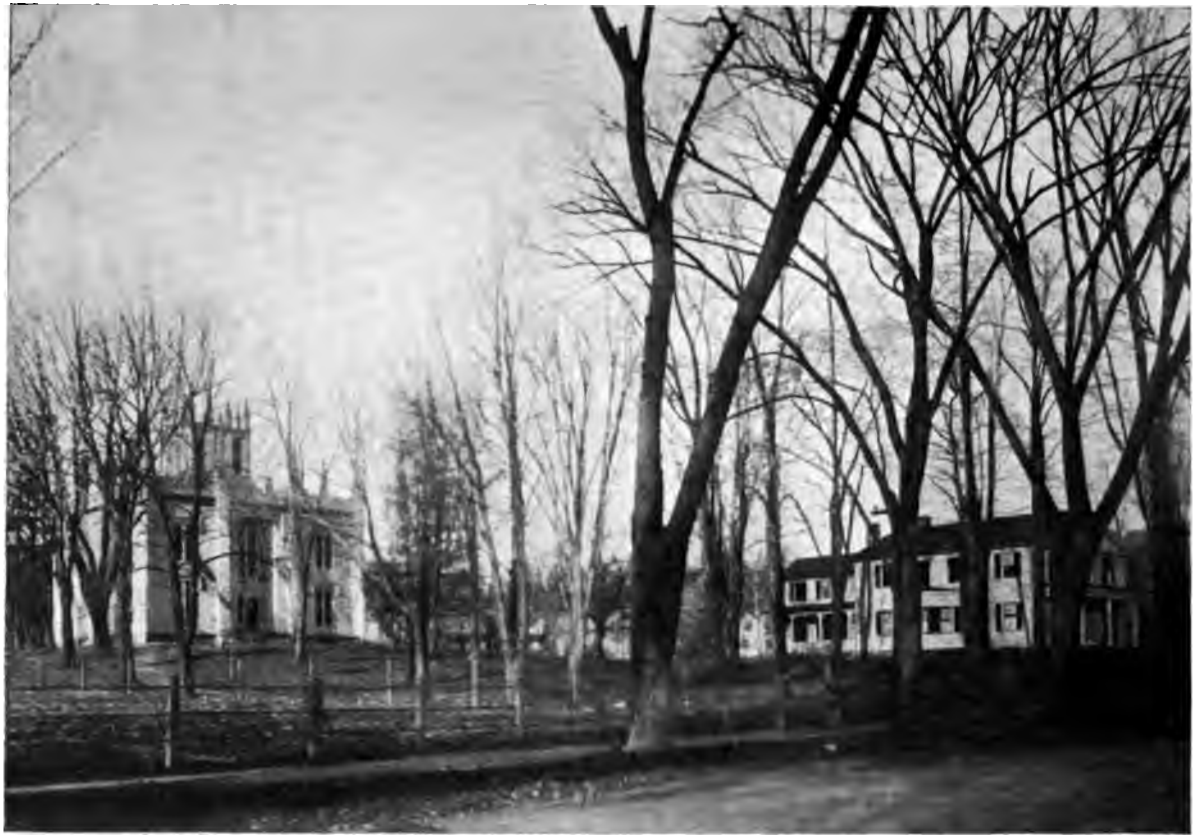
CHAPTER VIII.

ORGANIZING THE CLARKE SCHOOL.

On July 15, 1867, the gentlemen named by the legislature in its act of incorporation of an institution for the deaf, met in Northampton, at the home of Mr. John Clarke, the generous but unnamed correspondent referred to in Governor Bullock's message. Here the organization of the corporation was completed, Mr. Hubbard was elected to the presidency, and the corporate name "Clarke Institution for Deaf-Mutes" was adopted. Mr. Clarke objected to this name, claiming that it should be called the "Massachusetts School." But after repeated solicitation to allow the use of his name, he finally consented. Then a committee waited upon Mr. Clarke with copies of the act of incorporation, of the code of by-laws adopted, and of the minutes of the meeting at which the organization was perfected; and he transferred to the Corporation the sum of $40,000 in United States 5 per cent. twenty-year bonds, and a little later transferred $10,000 more, generously imposing no conditions and "leaving the disposition of principal and interest entirely to the discretion of the corporators." The first members of the corporation were:

Gardiner Greene Hubbard, President, Boston,
William Claflin, Vice-President, Newton,
Lewis J. Dudley, Chairman School Committee, Northampton,
Osmyn Baker, Clerk and Treasurer, Northampton,
Thomas Talbot, Billerica,
William Allen, Jr., Northampton
Julius H. Seelye, Amherst,
George Walker, Springfield,
Horatio G. Knight, Easthampton,
James B. Congdon, New Bedford,
Jonathan H. Butler, Northampton,
Joseph H. Converse, Boston.

After several conferences with Mr. Clarke, an examination of several pieces of property, and a full consideration of the subject, it was decided that the fund of $50,000 could be utilized to better purposes than by investing the greater portion in a building



THE FIRST CLARKE SCHOOL

and grounds. So a large and conveniently arranged house on Gothic street, formerly occupied as a young ladies' seminary, and having ample surrounding grounds, was rented for general use, while a short distance away two suitable rooms were rented for school and recitation rooms, in Mr. Dudley's large residence.

Following the organization, the oral method of instruction was adopted for the school. Miss Harriet B. Rogers was unanimously elected principal, and a cordial invitation was extended to the Chelmsford pupils to enter the new school. At first Miss Rogers hesitated to close the little pioneer school, because she preferred not to assume the larger responsibilities of institutional life, but later she accepted the courtly invitation. Miss Rogers left Chelmsford in August, and on October 1, 1867, formally opened the Clarke School, or Clarke Institution as it was then called, with Miss Mary S. Byam as her assistant.

In his annual address, delivered January 3, 1868, Governor Bullock referred to Clarke School and its generous benefactor as follows: "My anticipations of private assistance were speedily realized, and to a venerable citizen of the Commonwealth, whose name the Institution most appropriately bears, it is indebted for the most liberal endowment ever made to a similar institution upon this continent. In coming years, when we shall have passed away, and our agency in this labor of love shall have been forgotten, successive generations of the silent restored to speech will articulate with gratitude the name of John Clarke, of Northampton, who, in faith, hope and charity has devoted so large a portion of the accumulation of a life of honorable industry to a work of Christian philanthropy. I have no doubt that other generous citizens of the Commonwealth will respond to this act of munificence, and that before many years shall have elapsed no child of Massachusetts will be compelled to seek the means of instruction beyond her limits. In company with members of the executive council and several officers of the State, I have recently visited this school, which, in recognition of her self-sacrificing devotion to this class of unfortunates, has been intrusted to an enthusiastic and experienced teacher, Harriet B. Rogers. Although the school had been in operation but a few weeks, the progress of the pupils was not only satisfactory in the highest degree, but excited the admiration of experienced instructors among the visitors."

In its annual report for the year 1867, the Board of State Charities referred to the legislative action relieving it of the care and education of the deaf, to Mr. Hubbard's courageous action in behalf of deaf children, and to the gratifying success of the Clarke School, stating: "The two Acts of the last Legislature concerning the instruction of deaf-mutes, are likely *to do more to advance the interests* of the class for whose benefit they were enacted, *than has yet been done or attempted in any part of the world.* Nowhere else, so far as we are informed, has it been made a part of the regular system of education to give early and continuous instruction to the deaf and dumb. But by chapter 311 of the acts of 1867, the children of this class are placed almost exactly on the same footing with respect to education, as hearing children. They are allowed to enter school at the public expense as early as five years, and to continue ten years at school without cost to the parents, except as they may choose to pay for their instruction, which, like that of ordinary children, is placed under the oversight of the Board of Education. The means of commencing their instruction so early as five years old, have been provided under another act (chapter 334) which though later in number on the list of laws, was, in fact, of the same date, and logically, antecedent to chapter 311....

"The Board of Education will, no doubt, lay before the legislature, accounts of the gratifying success of Miss Rogers in teaching articulation to the pupils at the Clarke School at Northampton. The hopes entertained by those of us who have advocated a greater use of articulation in teaching the deaf, have been fully realized...."

During the following year, 1868, the school was visited by officials and teachers from various sign-institutions for the deaf. From the west came two superintendents, each with strong and avowed prejudices. Before leaving, one said: "I am at the head of a State institution which has 250 pupils, but if I had a deaf-mute child of my own, I would send it at once to Northampton." The other responded: "So would I." Both immediately introduced the oral method in their respective institutions.

Perhaps the clearest portrayal of the sentiments that prevailed in educational circles in 1867, is found in the essay on "Articulation Teaching in the Wisconsin School for the Deaf," presented by Miss Hobart at the Chautauqua meeting of the American Association, in 1894. Referring to the early work of the State School for the Deaf, at Delavan, Miss Hobart tells how Miss Emily Eddy, "during her vacation in the East, in 1867, visited Miss Rogers and her school at Chelmsford, shortly before its removal to Northampton, and there she gained her first ideas as to the practical utility of speech and lip-reading for the deaf pupil. Instead of finding that it might be added simply as a slight accomplishment in connection with training received principally by signs and written language, she became convinced that *a better use of the English language and higher attainments* could be made by this medium than without it; that though a laborious, it was a practicable undertaking. Accordingly, on her return she urged that the beginning of oral work in the Wisconsin school be at once attempted. From the trustees' report for the year ending October, 1868, I quote the following: Experience has established the fact that some of the deaf and dumb do now understand from the motion of the lips what a person says, and can hold conversation with others in this manner the same as speaking persons. It is not pretended that all may be taught in this way, but that a majority can. The friends of this mode of teaching advocate the abolition of signs altogether, where oral instruction is given. Schools for this kind of instruction have been established in Massachusetts under Miss Rogers, and her success has been very good in this direction. She visited our institution the past summer, and gave the trustees and teachers instruction in her method of teaching. She is very sanguine that it is the true method in a majority of cases and will in a short time be adopted. While here she inspired so much confidence in her mode, that the trustees felt it a duty to make the trial in our institution. They had a class formed at the commencement of the present term and put under the instruction of Miss Eddy. She has been engaged with her class for about two months. The progress which some of the class have made during this short time is quite surprising to all who have taken the opportunity to witness the same. The deaf and dumb have been taught to speak in this institution, and some of the class speak with remarkable clearness. Persons may be incredulous in this matter, but we say to such, 'come and see for yourselves.' "

It is recorded that in May, 1868, "while on their way to attend the National Conference of Principals held in Washington, D. C.," Dr. Milligan and Dr. Gillett "paid a visit to the Clarke School, in order to observe the methods and results of the work done there." On arriving in Washington these visitors "were very closely questioned by other members of the Conference as to what they had seen, and in the course of debate much skepticism was expressed regarding the value of oral instruction, but these gentlemen, while not professing to be converts to the method, testified to the honesty and to the value of the work being done at the Clarke School." The opening remarks of Dr. Milligan, on this occasion, express the attitude with which they entered upon the investigation and the conclusions that were forced upon them by the evidence of their senses: "I do not know that I can say anything in addition to what has already been said. It is difficult for any person to knock over all the work of years; even though he has been laboring to build a cob-house, it makes him distressed to see it fall. I do not mean to say that our teaching has been of the cob-house order. I went to Northampton, not believing, for physiological reasons, that those who had no auditory nerve could ever learn to speak and articulate and it is not pleasant to me to find out that they can. (Laughter). I am willing to say that I am disappointed; but it is so, that they do talk. We cannot get around it, and we have got to put up with it, for they won't stop talking for all our resolutions."

Dr. Gillett's account of that visit at Northampton, as presented at the Lake George (1891) meeting of the American Association, is as follows: "Some of you know that I am one of the original articulation teachers. I was raised by and under the strictest sect of the Pharisees, having been trained by Dr. McIntyre and taught to believe that it was not practicable or sensible to undertake to teach speech to the deaf. I was earnest in the conviction. But I saw in the newspapers in 1867-68 accounts of the work that Miss Rogers was accomplishing at Northampton. When the first Conference of Principals was called to meet in May, 1868, I wrote to Mr. G. O. Fay, Superintendent of the Ohio Institution, Mr. McIntyre of the Indiana Institution, Mr. Kerr of the Missouri Institution, Dr. Milligan of the Wisconsin Institution, and I think also to the elder Mr. Fay of Michigan, suggesting that we all meet in Northampton at a given time, as we might take that place en route to Washington where the Conference was to be held. Our expectation was to see something that was palmed off on the public as genuine, which nobody who had visited that institution had sufficient discrimination to detect as a fraud. This is an honest confession, but I hope I shall feel better for it.

"I went first to Boston and saw Mr. Hubbard, and also saw Miss Mabel Hubbard, now the wife of our honored President. Mr. Hubbard took me into his house, where I had an interview with Miss Hubbard, whom I was desirous of seeing, as I had heard interesting particulars of her case. My peace of mind was much shaken by this interview. I then went down to Northampton, Mr. Hubbard going with me. I spent two days in Northampton, Miss Rogers giving me every opportunity of learning all I wanted to know. Dr. Milligan was with me; the other gentlemen had not quite courage enough to come to time. We had a most delightful and instructive visit. It was one of the important milestones in my life. Before I left Northampton I was entirely changed in my opinion as to the advisability of attempting to teach the deaf to speak.

"Dr. Milligan and I proceeded to Washington and at the Conference gave an account of what we had seen at Northampton. If you will take up the proceedings of the First Conference of Principals, known as the Sixth Convention, May 17, 1868, you will find something in that report from Dr. Milligan and myself. I felt it was time to right ourselves and I thought that the occasion had arrived for the institution with which I was connected to take into consideration this new method. After reaching home I made a special report to our trustees concerning the subject, and received from them authority to immediately begin classes in articulation. We made honest work in that direction and have carried it on conscientiously. Not to the degree of efficiency I would like to have done,—but still we have accomplished something for which we are very thankful."

Dr. Harvey P. Peet, Mrs. Peet, and Mr. O. S. Strong visited the school in October, 1868, and expressed their surprise and pleasure at the remarkable results attained by Miss Rogers, and especially at the ease with which the pupils read the lips. Representatives also came from Ohio, Illinois, Wisconsin, and Minnesota. And it was recorded that the principal of the California institution offered Miss Byam a salary of $1,200 in gold to introduce the method in his institution; but the offer was declined. Governor Chamberlain, of Maine, also visited the school.

On February 2, 1869, Mr. Hubbard wrote: "Our school has been visited by the principals of several deaf-mute institutions during the past year, and Miss Rogers, at the request of the corporation, visited several of the western institutions in June last, both to recruit her health, and to observe their method of instruction. Teachers from the Ohio and Illinois institutions have spent some time at Northampton, watching the system of Miss Rogers: and classes in articulation and lip-reading have been organized in the State institutions of New York, Ohio, Illinois, and Wisconsin, and at the American Asylum, in Hartford. To the principals of various deaf-mute institutions, particularly in the western states, we desire to express our sense of obligation for the courtesy extended, and the information afforded by them to Miss Rogers."

In his first annual report, Mr. Hubbard stated that "the Clarke Institution differs from all other American institutions in this, that it receives pupils at as early an age as they are admitted in our common schools, and in teaching by articulation and lip-reading only. At this school, before the articulating muscles have become rigid from want of use, and while the powers of imitation are the quickest, and the imaginative faculties the most active, the little deaf-mutes are taught the power of the letters, the articulation and meaning of words and short sentences, and simultaneously, by watching the motion of the lips in forming the sounds, to read from the lips. Natural signs, pictures, and objects are used to explain the meaning of new words." And in her second annual report, dated December 31, 1868, Miss Rogers wrote: "Believing that all signs on the part of pupils, and all on the part of teachers, except those few and simple ones used by intelligent mothers and nurses to explain the meaning of new words or phrases, (called by the president of our corporation, in the report of 1867, 'natural signs'), are prejudicial to advancement in articulation, whatever their intrinsic merits, we do all in our power to prevent their use here."

October 1, 1872, Mr. F. W. B. Sanborn and Mr. L. J. Dudley, in a special report stated:

"It is a matter for congratulation among the friends of an unfortunate class, that a new era in their education seems to have dawned. Not that any well-rounded system for all has been perfected and adopted,—not, perhaps, that any one feature of such a system commands, as yet, universal assent. But there is in most of our deaf-mute institutions, an unwonted energy, a spirit of inquiry, an abatement of prejudice, a generous rivalry, and a disposition to 'prove all things,' as well as 'hold fast that which is good.' Each keeps itself in readiness to profit by the experience of the other. We anticipate from the discussions and experiments now in progress, results as auspicious to deaf children as have been the results of the same processes in regard to methods in public schools to hearing children."

In 1880, Dr. Isaac Lewis Peet, eminent in the councils of the advocates of the sign-language, said: "I think I never was in an institution where a benevolent foundation had done more good, where the buildings were better arranged for the purpose of deaf-mute instruction, than in this one. Here, boards of directors can find a model for the construction of new buildings. Here they can find all those appliances which we especially need for giving to the deaf-mutes the idea of home and happiness in this world, and of lifting their aspirations for pleasant lives in the future."

Then, as a compliment to Miss Rogers and in response to her cordial invitation, the National Conference of the Principals of Institutions for Deaf-Mutes held its fourth meeting at the Clarke School, in May, 1880. On the fourth day Mr. Gilbert O. Fay said: "We have not only had delighted association with the residents here, but we have had opened to us that beautiful book, the minds of these deaf children, who, by methods somewhat new to some of us, have been led along so far and so high, in the process of education; and we have had opened to us views of personal progress, personal purity and excellence of character, and the modest bearing of children, which have won our admiration. It places in our minds standards of excellence and possibilities of success which we shall never forget, but which will remain in our memories for guidance and assistance."

In 1887, twenty years after its organization, the corporators placed on record their official and personal belief that "the amount of good growing out of the establishment of the Clarke school is not to be measured by the number of its pupils. The discussions that preceded and followed its organization, together with its early success, were not without their influence upon all the schools of the country. They served to awaken a new interest in the education of the deaf, and to breathe new life into the old system of instruction. The antagonism, jealousy, and distrust at first existing between the champions of the two systems, gradually gave place to a sober second thought, to a reconsideration of former exclusive views, and, finally, to a spirit of harmony and co-operation. The result has been that, while of the twenty-four schools existing in the country twenty years ago, not one made any provision for articulation and lip-reading, of the sixty-six now existing, only six fail to make some provision therefor, and seven are distinctly oral schools."

In 1883, Miss Yale was the accredited delegate of Clarke School at the Third International Congress for the Amelioration of the Condition of Deaf-Mutes, held in Brussels, August 13-18, and, on her return made an interesting and comprehensive report which was incorporated in the annual report of Clarke School for the year 1883. After the Congress had closed, Miss Yale visited eight schools in Germany, one in Switzerland, and five in England, as well as four in Belgium. In visiting the German schools she was accompanied by Miss Hull, in whose private school at Kensington Dr. Bell first experimented with visible speech in teaching articulation to the deaf, and they "selected those schools which, on careful inquiry, were named as among the best; for our object," Miss Yale wrote, "was to know the possibilities of our system for success, and not to see what failures might be covered with the name of the German System." And all that she saw in these German schools inspired her "with greatly increased confidence in the German System."

CHAPTER IX.

THE GROWTH OF CLARKE SCHOOL.

Miss Rogers opened the school on the first day of October, 1867, and before the end of October nineteen pupils were enrolled, while one was accepted in November. Eleven were born deaf or had lost their hearing before two years of age and before they had acquired any knowledge of speech or of language. The price for board and tuition was fixed at $400, and for tuition only, at $100, per annum. In the beginning there were only two teachers, Miss Rogers, and her very able assistant, Miss Byam, who taught at Chelmsford. Mr. Hubbard appreciated that this was "not a sufficient number of teachers in a school where anything like systematic classification of pupils so recently brought together, so limited in number, and yet so diverse in age, capacity, wants, and attainments, was impossible. For the number of distinct school exercises each day was twenty-five, some of which were with individual pupils, and some with a large portion of the school"; and the following year the number of teachers was increased to four.

Among the pupils was Theresa Dudley, who entered on October 3, 1867. Miss Rogers has said that Theresa "could articulate *papa* and *mamma* very well, and three other words very imperfectly, and a few of the letters, which she learned while spending a few days at Chelmsford." During the first six weeks at the Clarke School, Theresa "learned the sounds of all the letters of the alphabet and many combinations of consonants, among them the *ng*, one of the most difficult.... On November 16th, she came to my room and said, 'Mamma wants you to go to her.' I said, 'Where is mamma?' She answered, 'In the hall.' These words were all spoken." December 31, 1867, Miss Rogers wrote: "Theresa has learned a great many words, which she delights in speaking. Sometimes, in talking, if she cannot articulate a word, she will spell it with her lips in preference to using

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the fingers (as taught before coming to Miss Rogers). She has a spelling lesson daily which she reads from the lips, and spells by sound; reads simple sentences from the lips, and writes them on her slate. She uses her fingers very little, expressing almost all her wants by spoken words. She frequently says, 'I like to talk much better than to make signs.' On December 31, 1868, fifteen months after instruction began, Miss Rogers wrote: "Theresa's progress in articulation and lip-reading during the year has exceeded our most sanguine expectations. Already articulation and lip-reading are her means of communication with her parents and friends; with strangers, too, the same means are increasingly available, and in some cases perfectly so. She delights in her newly developed power, and is being restored to society. A whole evening's conversation with her parents is reluctantly ended. Last April she began the study of American history, and has completed the 'French and Indian War.' She recites orally; and then gives, without reference to the book, a written synopsis in her own words, generally expressing clearly the idea of the historian. From this exercise she is rapidly acquiring a varied and extensive vocabulary."

The whole number of pupils enrolled the second year was thirty-eight, of whom nine were congenitally deaf, twelve lost their hearing between one and four years, and thirteen were either semi-mutes or semi-deaf. The number of teachers was increased to four, as "the system of instruction demanded great care and attention, and necessitated a great division of labor," while the teachers had "forty-seven distinct school exercises each day." This increase in the number of pupils made it necessary to rent a second house for occupancy by some of the pupils and their teachers, while Mr. Dudley gave up two more rooms in his residence for use as school rooms.

Early in 1870, the increase in the number of applicants made it expedient to secure suitable premises for a permanent school where a larger number of pupils could be properly domiciled and cared for. So, in June, two estates, the Clarke and the Kirkland on Round Hill, containing nearly twelve acres and divided into two nearly equal portions by a street, were purchased for $31,410, and this acreage constitutes a portion of the present site of the school. Included in the purchase were two large residences, a stable, a gardner's cottage, and a laundry, all well built and conveniently located. These residences were enlarged, altered, and repaired before the last week in September. To the three-story brick and stone Kirkland residence an addition 30 by 40 was built, a French roof added, and the building was converted into a dormitory for the girls and named Rogers Hall, while the frame residence was called Clarke Hall. When the alterations were completed Rogers Hall contained twenty-one bedrooms, a hospital room, and the necessary bath rooms on the second and third floors; while on the first floor were the girls' playroom and parlor, a public reception room, a teachers' sitting-room, Miss Rogers' rooms, and a spare bedroom or two. The dining-room and kitchen were located in the light, airy, and commodious basement, the latter containing a large Warner range. When remodeled the Clarke residence formerly known as the Clarke and Spalding Boys' School, was a large frame structure, arranged with an office, five large, well-ventilated school-rooms, and a reception room which could also be used as a recitation room, all on the first floor, while the second floor was used as a dormitory for boys until the following March, when it was converted into a large hall. A few of the dormitory-rooms contained more than two beds. Pupils were taught and required to make their own beds and to keep their rooms in order. In the meantime a three-story brick dormitory for the boys, 53 by 80 feet, was in course of erection on the opposite side of the street, which was completed and ready for occupancy the following March and christened Baker Hall. On the first floor were the boys' parlor and playroom, public reception room, teachers' sitting-room, hospital-room, guest chamber, and steward's office. The second and third stories contained a total of twenty single and five double rooms, bath rooms, etc. All these buildings were then heated with furnaces.

The total cost of these buildings, together with the furnishings and the grounds, at the time of their occupancy, was $98,825.86, in the payment of which a debt of about $34,500 was incurred. This debt was covered by notes carried by a Northampton bank, and by careful management the entire debt was wiped out by 1876, or within five years after taking possession. Immaterial as these details may now appear, they are of peculiar interest in indicating how thoroughly imbued Mr. Hubbard, Miss Rogers, and their co-laborers were with the belief that the oral was bound to be the prevailing method of instruction in time, and how broadly and wisely they planned for the future.

Never was a more beautiful or a more inspiring or a more healthful location for a school than the site the corporators secured on Round Hill. It overlooks the broad valley of the Connecticut, with its level, fertile meadows, while to the south lie Mounts Tom and Holyoke. It is also a section rich in historical interest, for nearly seventy years ago the famous instructor, Dr. Cogswell, had a classical school on Round Hill, while the eminent historian, George Bancroft, taught here, and resided in one of the buildings now occupied by the Clarke School.

Referring to the method of instruction that prevailed in the Clarke School in 1876-1884, Miss Alice Worcester, in reply to certain questions asked at the convention of articulation teachers of the deaf, held in New York, in June, 1884, said:

"Children in our class this year and in our class last year learned everything first from the lips, every sound, every combination, then they wrote that for themselves, as I said before, of course pronouncing it. Everything is given them first from the teacher's lips and they pronounce it from our lips. After pronouncing it they write it for themselves, and if they required any assistance, if the spelling of the word was such that they could not spell it for themselves, they received the needed assistance. In the effort to make the children depend entirely upon the lips, we have endeavored to keep our hands entirely still so that we should not be betrayed into using the crayon unnecessarily. We have taught everything from the lips. The teacher, who has had our class in geography, has taught the children to pronounce every geographical name from the lips. I remember, very well, one day last fall, when children came to me to pronounce 'Mediterranean sea'; they didn't know the word, but they had seen it on the maps, and I would like to say there that the trouble with our geographical names has been to a large degree obviated by teaching pronunciation of them in that way. In our little class this year we had, at the end of the year, quite a large vocabulary learned from the lips; they spoke the words first, and when they said them nicely they wrote them. One especial effort of ours has been this year to make one repetition suffice for a class. We have, for that purpose, placed the children so that they could see each other's lips, as they sat on three sides of a square, the teacher sitting in the centre—occupying the fourth side—and have tried, just as far as possible, to avoid repetition by confining the children's attention to the teacher's lips, and making one repetition suffice, if possible; then getting them to watch each other and get from each other what they could not get from the teacher. The work has been done very largely by one repetition on the teacher's part, the children repeating afterward. We have thought that result was very good."

Mr. Wines: "I should like to ask one other question. A good deal has been said about teaching articulation by elements, by syllables, and by words and phrases. In teaching lip-reading, do you begin by teaching them to recognize elementary sounds or by teaching them to recognize words and phrases as a whole?"

Miss Worcester: "Well, we do both. We do just what Miss Keeler's paper says. In the very first instance, we say to them: 'come' and then 'go' without using the hand. Then we say: 'Go and sit down' without any action, so that they are reading sentences from the lips from the very first, but our effort in the first instance is directed to the point of enabling them to take such language from the lips as will make the school work go on without interruption."

In 1876, the buildings were again enlarged. This increased room permitted the opening of a primary department in Baker Hall. The cost of all these improvements together with the necessary furnishings, was about $54,000. In 1883, it was thought best to purchase additional land on Round Hill "for the more complete seclusion of our school from public travel and near neighbors, while the price paid was such as to make the property desirable even as an investment." In 1891, a new brick laundry with all modern appliances, and having rooms for the employes, was placed in operation. Then, the entire heating apparatus was completely changed. In place of small boilers under each building, a steam plant of two boilers was erected in a new and separate boiler-house, steam pipes were laid underground to each building, with return pipes for condensed steam, and provision was made for storing a full year's supply of coal. In addition to these, other desirable changes and improvements were made. In 1892, a greater pupil-capacity being demanded, Dudley Hall, previously unfitted for pupils, was reconstructed internally and furnished with all modern appliances for independent housekeeping, thus affording accommodation to twenty-five pupils and their teachers. A substantial double brick house was erected in the rear of Baker Hall for occupancy by the master of the cabinet shop and the steward. In 1894, more room being required, a handsome three-story and basement building was erected adjoining and became a part of Dudley Hall. It was occupied in February, 1895, the dining-room and kitchen being arranged in the large, well-lighted basement; the first floor was devoted to school-rooms and public rooms; sleeping rooms for teachers, attendants, and pupils occupied the second and third floors, while the large attic served as a desirable play-room when the weather was unpleasant. This new building and its furnishings represented an investment at that time of over $15,000, which amount had to come from the income of the Clarke fund.

These details may appear of small moment at this late date. Yet they are of value not only in emphasizing the exceptionally wise and careful management on the part of Miss Rogers (to 1886) and Miss Yale and the trustees, which has made it possible for Clarke School to maintain its acknowledged leadership among oral schools, and to have accomplished all the good it has, notwithstanding the fact that Clarke School has, from its own funds, expended in behalf of the wards of the Commonwealth about $250,000, in addition to the amount appropriated by the legislative enactment; but they also portray indelibly the remarkable foresight and determination displayed by Miss Rogers and Mr. Hubbard. They did not build for a day, but for all time. Not for one moment did they trust that time and chance *might* prove the oral to be the only right method. They made the oral "the only way" in which the deaf can be properly instructed. Perhaps we stand too close to its inception to appreciate the magnitude of this pioneer work, but the day is coming when its true value will loom large and honors will then be generously bestowed.... after all the pioneers have passed away.

On October 12, 1898, President Franklin Carter, in his annual report to the Massachusetts Board of Education, said: "The actual cost of keeping and instructing each pupil in this school in 1896-7 was two hundred and eighty-two dollars ($282). Because of the generous foundation of Mr. Clarke, which besides having paid for these buildings and grounds, produces an annual income, at present, of upwards of fifteen thousand dollars ($15,000), the State of Massachusetts secures for her deaf children a comfortable home and loving care and patient and excellent teaching for eighty-two dollars less than actual cost. For one hundred and twenty pupils that represents a gift each year, from the munificence of one man, of about ten thousand dollars ($10,000). If we count the number from Massachusetts for the last ten years as averaging only one hundred, the sum total of the value of this gift to this State for these ten years would be at least eighty thousand dollars ($80,000). This does not include the interest on the investment in lands and buildings representing at least two hundred thousand dollars ($200,000). The value of the land has been increased this year by the purchase of an adjoining lot at the price of five thousand dollars ($5,000). If the interest on the money invested in the plant from the first be reckoned, as it fairly may be, it is within bounds to clain. that by the munificence of John Clarke since the founding of this school more than two hundred and fifty thousand dollars ($250,000) has been actually expended for the maintenance, care, and instruction of the deaf children of Massachusetts, for which no return has been made by the State."

Again, in his annual report for the year ending August 31, 1904, President Carter said: ".... A graver embrassment than that of inadequate buildings is now upon us. The increased cost of living, and the steady advance in wages for personal service, and the decline in the rate per cent. on capital compel the corporators to face a yearly deficit, which has already become serious. .... It is perfectly reasonable to divide the entire annual expenses of the school by the number of pupils taught, in order to arrive at the cost of maintenance and instruction for each pupil. If the year's expenses are thus divided by the number of pupils taught, we find that the cost of each pupil the last year was $350. As the State pays $250 for each pupil, the deficiency for each ward supported by the State would seem to amount to $100. If the number of pupils supported by the State is multiplied by this sum, we have as a result the sum of $11,600, which is the amount of the cash contribution to the State made by this school during the past year. As the entire income of the (Clarke) fund amounts to a little over $14,000, we have as a remainder, after our contribution to the State, only $2,400 for extraordinary expenses and any enlargement found desirable. Whether the authorities of the State of Massachusetts understand the fact that the school is contributing so large a share as five-sixths of its income for the deaf children whom the State nominally supports, is doubtful. They certainly do not appreciate the significance of the fact."

Commenting on President Carter's statement, the *Springfield Republican* said: "If one were looking for glory in making an endowment, it might be received in greater measure and would be well deserved by a handsome gift to a college, but one would get closer to the heart of humanity by extending a hand to these young people who require first aid. By the former course, he would minister to the worthy ambition of young people; by the latter, he would minister to pure joy and gratitude. What the conferring of the power of ready communication means to deaf children and their relatives is little realized by those who have not come in contact with the present work on behalf of the deaf and its results."

As the annual reports clearly show, in the past the buildings occupied by Clarke School were excellent and adequate for all needs of teachers and pupils. But the school outgrew these quarters several years ago, and, sooner or later, new buildings must be provided. And what a magnificent opportunity is here for some son of the Bay State to have his name engraved where it will never be forgotten so long as speech is taught to the deaf.

CHAPTER X.

CLARKE SCHOOL AS IT IS.

While in 1867, one building sufficed for the single family then embracing all the pupils and their instructors, healthy growth soon made it necessary to divide the school into departments, and instead of one home and one family there are now three separate and distinct families nearly of equal size. One family, containing forty-five young children, occupies Dudley Hall and is classed as the primary department, with a teacher-in-charge, four other teachers, one matron, and four supervisors; another, containing about fifty members, occupies Baker Hall, is called the intermediate department, and is under the care of a teacher-in-charge, five other teachers, a matron, and three supervisors; while the third family, containing about fifty of the oldest and most advanced pupils, occupies Rogers Hall and Clarke Hall, and is classified as the grammar school, having six instructors, a matron, and two supervisors. In addition to these regular teachers the school employs special instructors in gymnastics, sloyd, cabinet work, wood carving, and in drawing. Miss Caroline A. Yale, who has been the principal since 1886, and for sixteen years prior was the immediate assistant and associate of Miss Rogers, states that "by this division and the sub-divisions in each family and by the emphasis laid, from the first, on the importance of household arrangements and of the family life under the care of teachers and playroom attendants we feel assured that many of the objections to so-called 'institution life' are removed. Each teacher and attendant may know intimately every boy and girl under her care and exercise over each that personal influence which is quite impossible when a larger number is under the care of one person or where teachers do not live in constant contact with their pupils, directing their reading and conversation, sitting with them at their meals, going familiarly out and in among them. Such family life is more expensive it is true, but we cannot doubt that it is well worth the cost."

CAROLINE A. YALE

In her annual report for 1889, Miss Yale said: "The complete separation of older and younger pupils has many and generally acknowledged advantages. A different arrangement of hours, occupations, amusements, and diet is by this means made entirely practicable. In each school and family the number of persons employed as instructors and caretakers is determined with reference to what is judged to be for the best interests of the pupils rather than with reference to the expense incurred. Each department of the school contains as many grades as though the number of pupils were far larger than it is. So that, while we gain all that is to be gained from careful grading, we have also the generally conceded advantage arising from small classes."

In her annual report for 1903, Miss Yale, in referring to the three different departments said: "There are five classes in the primary, six in the intermediate, and six in the grammar. In the primary each teacher retains one class throughout the day; in the intermediate there is some variation in this plan; while in the grammar grades each teacher has, so far as possible, all the work to be done in connection with one or more subjects by whatever class pursued. The teaching of the deaf must always be the teaching of language from the day when the little speechless, wordless child begins his struggle for expression to the day when the world of books opens to him. The teaching of language is, however, often best accomplished by teaching some subject ***through*** language rather than by direct discourse about language construction. The study of mathematics or science, of history from text book or current publications, is valuable because of the knowledge of facts gained, but to the deaf child, as to his normal fellow, more valuable for the mental training which each study gives, and to the deaf child beyond question for the mastery of language gained. In this conviction, even in our primary classes, we have introduced more and more elementary science work. It is very elementary, but so long as it excites observation and induces the use of language it is certainly an invaluable aid to language teaching. In the intermediate department, geography has been taught with greater emphasis on the physical facts connected with each subject; more time has been given to nature work and more to stories of American history. In the grammar department, an increasing amount of time has been given to natural science and to current history."

In 1901, Miss Yale wrote: "The first school days for the little child, where life has thus far been play and play only, must be so filled with the new activities of the schoolroom that he shall feel only that he has found new playmates and shall see in the teacher only a new inventor of games and good times. But the teacher is taking note in each game of the child's power of observation and of imitation. She is planning the shortest and surest route by which these little ones may be led out into broader light and knowledge.

"To enlighten the understanding of these little ones, some child from a more advanced class is called in and as the teacher speaks such words as 'run, jump, walk, a ball, a top, a cow,' the little fellow proudly runs, jumps, and walks, showing by actions that he knows what these verbs mean, and pointing to the toys and models about the room, showing that he had learned the names of all these.

"Another exercise proves of intense interest to the little people. One of their number is placed with the side of his head against the wall slate and the teacher slowly draws the child's profile and the outline of his head. Then as she points to chin, lips and nose each child assures her of his full understanding of her drawing by pointing to that part of his own face which corresponds to the part of the drawing designated. Then the teacher parts the lips of her picture, and one by one the lips of the interested little faces before her open. Then the teeth and tongue are drawn in the picture. Now the interest becomes intense as the children follow with moving lips and tongue the rapid crayon of the teacher. *She* knows that she is teaching them to put the lips and tongue in position to produce the sounds of the letters. *They* only enjoy the new game.

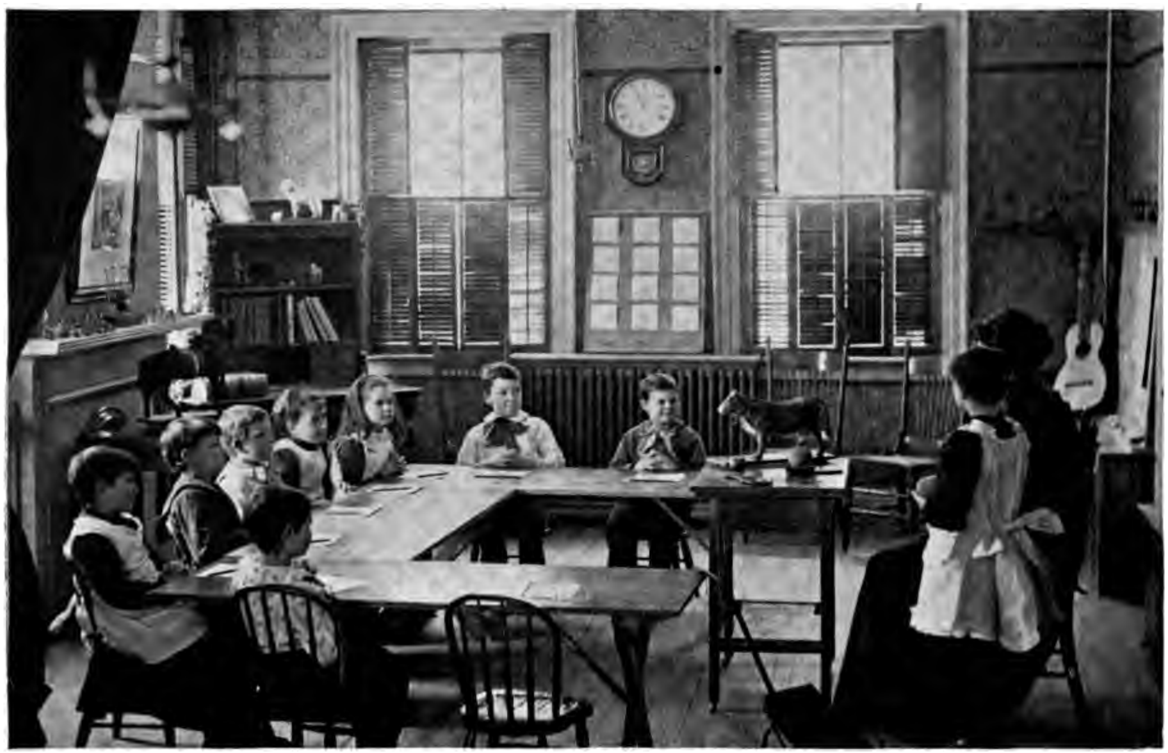
"Then a new wonder—the teacher again calls in a child from a more advanced class and points to one object after another about the room. This child who is so wise speaks the name of each object. No need of urgency now. What this child has done they can do. Eager little lips produce the sounds of letters, babble syllables and easy words, then patiently follow the teacher's guidance while they set words in order for sentences...."

The difficulty experienced in satisfactorily grading deaf pupils has been accurately described by Professor Davidson, who says: "In schools for the deaf the difference in the rate of advancement of the bright, the average, and the dull pupil is much greater than in ordinary schools, and the problem of grading is still further complicated by the fact that progress is so frequently irregular as regards the different branches of study. Some pupils, from the accident of having lost their hearing later in life than others, may average high in language and in those studies requiring primarily an understanding of language, and yet be very deficient in certain subjects and in the mental development they are intended to provide. To promote them under the usual method of classification means that they will always remain deficient in these respects, while to keep them back, compelling them to review in its entirety the work of the grade, cultivates in them habits of indifference, inattention, and indolence, from lack of necessity to exert themselves during a large part of the time, that will not only interfere with their future progress in school, but are in themselves defects of character that it should be the first and the constant aim of education to correct. As a matter of fact, the bright pupil of the lower grade seldom distinguishes himself in the more advanced studies, or does as well after graduation as those who were reckoned average or dull. The discipline of hard work does more to determine character and ultimate advancement than any amount of knowledge acquired from books or teachers. What is needed is a system of classification that will make it possible to give each pupil the instruction he requires in each subject of the course so that there will be orderly progress in the several branches and all may enjoy the full measure of mental and moral discipline from constant employment at tasks suited to their ability. This is most likely to be found in an arrangement of departmental teaching that will enable a pupil to take some subjects in one grade and some in another."

A former member of the Clarke training class has written that the Clarke school "is fortunate in its location; in its means of support and freedom from political control; in its unique system of management; in the uniformity of its methods; and in sustaining a teaching corps who have been trained uniformly. The school has a distinctively home feeling pervading it, more than is often possible in larger schools for the deaf.... Oral schools are criticised because speech is often made the aim at the sacrifice of mental development. In the Clarke school mental development is the aim reached through language, and this by means of speech and writing—speech because it is a helpful medium and an aid in the very development sought, and writing because this is the standard by which, as we must all concede, our work in any method is to be tested...."

At the twenty-fifth anniversary of the opening of the Clarke school, Miss Yale stated: "The formation of the *speech habit* and the *reading habit* are considered of paramount importance. First let the child come to spontaneously express himself in spoken language and look for that in others, and, second, let him be shown the delightful things that are to be found on the printed page. The acquisition and use of language come with the effort of the child to put his own thoughts into words and to get the thoughts of others from their spoken or written words. Could each child have always by him an enthusiastic and devoted teacher, making language alive and real to him every hour of every day, as Helen Keller has had, Helen's rapid acquisition of language would seem less a miracle. Ordinarily, however, it is from the printed page that our pupils must acquire the greater part of their language beyond the primary grades and in after-school life. It is therefore a chief object with us to induce and foster the reading habit by school-room exercises of various sorts and by providing the pupils with an abundance of books, magazines and papers carefully selected and suited to each grade. It is, if possible, more true of a reader among those without hearing when compared with his fellow men than of one in the world at large that 'the lover of books is the richest and the happiest of the children of men.'"

Shortly before the Chelmsford school was transferred to Northampton, Mrs. Henry (Mary A.) Lippitt, of Providence, sent the sum of $150 to Miss Rogers to be used in helping to pay current expenses. Fortunately the money was not required and was later returned to Mrs. Lippitt, who added $350 to the original



DUDLEY HALL SCHOOL-ROOM

sum and presented the $500 to the Clarke school as the "Jeanie Lippitt Fund," the income to be divided as follows: "Two prizes to be given each year to the pupils who make the best progress in articulation; and two smaller prizes to the pupils who make the most progress in penmanship and written language." (Incidentally, it may be added that through the influence and generous aid of Mrs. Lippitt, a class of children was formed in Providence, in 1877, which later formed the nucleus of the Rhode Island Institution for the Deaf.) Later, Miss Lippitt left the division of the income to be spent in prizes entirely to the judgment of the principals of the school. The present book value of this fund now exceeds $2,170. Mr. Whiting Street left a legacy of $1,000, which was paid by his estate, and was suitably invested, and now has a book value exceeding that amount. Roscoe Green, the Chelmsford pupil, whose conversation with Jeanie Lippitt at Mrs. Quincy's reception made such a deep impression on the legislative committee, bequeathed $2,000 to be absolutely at the disposal of Miss Rogers and to be paid out "in such manner and at such times as she may see fit." The full amount passed into the hands of the executor, but, it is recorded, he only paid over the sum of $431.57, "and that ten years after the proper time." The present book value of this fund exceeds $500. In 1904, through the influence of Miss Rogers, the school received the sum of $2,000 from the estate of the late Robert Charles Billings, the income from which will be used to advance the interests of the pupils.

A paragraph in the annual report of the Principal for 1899 reads: "Mr. E. W. Gilmore, of North Easton, moved to a deep interest by the education of a grandchild, a pupil in the school, has with his wife erected and furnished a gymnasium for the physical development of the children gathered here. The cost of the building and equipment will be about $15,000." And Miss Yale added: "No event in the history of the school for many years has aroused such enthusiastic delight as the beautiful gift of our friends Mr. and Mrs. Gilmore. The gymnasium building is itself most attractive and most complete in all its appointments. The lower floor contains a fine bowling alley, cloak rooms, instructor's room and lavatories with shower baths. On the upper floor is the gymnasium proper with running-track. The apparatus is largely that of the Swedish method and is of the best grade. The teacher in charge of the gymnasium work is a graduate of the Boston Normal School of Gymnastics and has had experience in teaching. The Gilmore Gymnasium, with its admirable equipment, must prove an invaluable adjunct to our work, for which the pupils and their parents as well as the officers of the school are most deeply grateful."

Five years later the annual report contained this sympathetic appreciation: "The Corporators of the Clarke School for the Deaf, having learned with deep regret of the death of Mr. E. W. Gilmore, desire to place on record their appreciation of his thoughtful and loving assistance and to express to his wife and family their sympathy in this great bereavement. His generous gift of a gymnasium building to the Clarke School has been of inestimable service in the training of our pupils and has greatly promoted a healthful development of both mind and body. In many other ways Mr. Gilmore has shown his deep interest in our school, and we mourn in his death the loss of a generous benefactor as well as a sympathetic friend."

For more than twenty years a normal training class has been maintained by the Clarke school to supply itself with a high grade of trained teachers of the deaf, that is, hearing teachers, for the deaf rarely make suitable teachers for the deaf under the oral method. The exceptional qualifications displayed by the graduates of this normal class for the work they entered upon, led the American Association to Promote the Teaching of Speech to the Deaf, in 1892, to request the trustees of the Clarke School "to enlarge the training class so as to supply teachers for other schools." Thus, since September, 1892, a few students have graduated each year from this teachers' training class for the purpose of entering other institutions. During this period of twelve years over eighty teachers of articulation have graduated, all but two of whom were women. With increased facilities the number could easily have been doubled or trebled.

On October 8, 1890, in referring to the help the movement might gain from a practical training-school for teachers, Miss Yale wrote: "The attempts made in our own school to assist teachers to fit themselves for the work make us more eager for the help we may anticipate from such a school. When well-trained teachers can be secured, we may be sure of better work; sure, too, that entering teachers will not be overburdened in the attempt to fit themselves for the work they must at the same time be essaying to do. The ease in work as well as the skill of a well-trained workman is a matter of greatest importance. It may be possible for a principal to admit one or two persons to gather what they can from instruction given to entering teachers, but the school and its immediate needs should always be considered paramount, and the general work of training teachers, if it is to be done in the best way, must be relegated to other hands. If graduates of normal schools and colleges for the hearing may pursue an additional course of instruction whereby they may furnish themselves for the special work of giving speech to the deaf, better days are surely coming for the nine thousand pupils in the schools for the deaf in America."

That the beneficial and far-reaching influence for "good growing out of the establishment of the Clarke School is not to be measured by the number of its pupils," is shown in the following excerpts from the report of the Principal of the Texas State School for the Deaf, Prof. J. W. Blattner, "who has practiced for a quarter of a century, methods quite other than the one that he so warmly commends":

"As forecasted in this paper last June, the Principal and nine teachers went to Northampton, Mass., at the close of our school to take a special course of training and observation in speech training at the Clarke School for the deaf. They arrived there about two weeks before the close of that school, and had thus a good opportunity of seeing it in operation. Miss Yale and her assistants gave them a cordial welcome and the freedom of their school. In the daily observation they saw much of the routine work of the classes, and gathered many a useful idea as to the methods pursued. In the primary department, under Miss Leonard, they observed the methods pursued in sense training and the first steps in the teaching of speech and written language. In the intermediate department, under Miss Gawith, they saw the Northampton methods of teaching written and spoken language applied to higher grades, together with excellent work in numbers, natural history, and the beginning of geography. The advanced department under the immediate supervision of the Principal, Miss Yale, presented a continuation of the methods of language teaching and very fine work in geography, history and arithmetic. The spoken and written language-work from the primary to the highest grades was so adjusted that it dove-tailed and harmonized thoroughly. There seemed to be little written work anywhere without its spoken complement. The results secured in speech and the command of English, as observed by our teachers without bias, are most excellent.

"Miss Yale informed us in the start that no part of intellectual development was sacrificed to speech, that the ultimate aim is education, mental development, to which every phase and feature of the work must contribute. This, she said, was and always had been the policy of the school.

"Such a claim would seem rather extreme to those who oppose the pure-oral method, but candor compels us to say that our two weeks' observation of the class-work, during which time we were given an exposition of the methods pursued in the school, from the lowest to the highest grades, and of the attainments of the pupils, went a great way toward confirming the claim. Indeed, we do not hesitate to praise all the work seen at the Clarke School. The results attained in the English branches and in speech are, in a word, fine. There is an air of study, thought, and refinement about the whole place, and the zeal, the *esprit de corps* of officers and teachers, is worthy of imitation. We go further and say, with no desire to reflect upon the good work done anywhere, that representatives of other schools, and among them not a few of our boasted combined-system schools, may learn lessons of great value from this pure-oral school at Northampton. Our self-esteem will even allow us to confess that we did. The ideas gathered up in school-room, shop, chapel, and dining-room at the Clarke school, and the special instruction received during our month's stay there, will be an aid and an inspiration to us in the years to come, and will certainly manifest themselves in improved results at this school."

At the 1899 Summer Meeting of the American Association to Promote the Teaching of Speech to the Deaf, the late Dr. J. C. Gordon offered a resolution that was unanimously passed by a standing vote, tendering the grateful thanks and high appreciation of the Association to Miss Yale, and adding: "The resolution is very imperfect because we wish also to express the thanks of the whole profession, and of all who are interested in any way in the welfare of the deaf, for the influence which Miss Yale has exerted from this mount of advantage upon every school in the land. Her daughters are with us, and I am sure her grandchildren will 'rise up and call her blessed' in every school in the land."

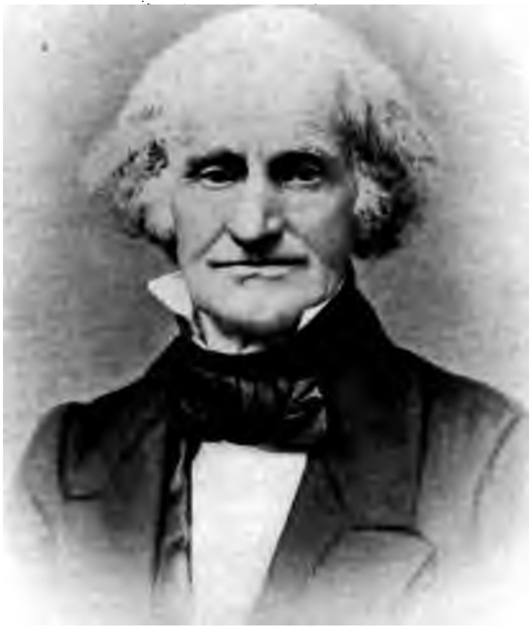
CHAPTER XI.

JOHN CLARKE OF NORTHAMPTON.

John Clarke was a son of Samuel Clarke, who was a merchant in Northampton from 1796 to 1822, a period of 26 years. In 1810, at the age of 21 years, John and his brother Samuel were admitted as partners in the father's business. John continued in business in Northampton until 1848, when he retired from active management. That same year he was chosen president of the newly-established Holyoke Bank, which office he held for nine years. Until his death he remained a director in the Northampton National Bank, the institution that absorbed the old Holyoke Bank. Commenting on Mr Clarke's death, the editor of the *Gazette and Courier* said: "Few men have lived in this town who in their lives possessed more of the love and esteem of the community, or who died more universally lamented."

On Friday, July 2, 1869, Mr. John Clarke was taken ill and his physician pronounced it a case of pneumonia, though not a dangerous one. But on Sunday morning he suffered an attack of paralysis, became unconscious and so remained until he passed away about seven o'clock Monday evening, July 5.

In his will, dated February 10, 1869, after making gifts to his heirs and to others, and bequeathing $40,000 to the public library of Northampton, Mr. Clarke provided a fund of $200,000 in gold for the institution, and made it his residuary legatee. In accordance with the terms of the will, the executors transferred the sum of $223,250 in currency on November 21, 1870, and on the closing of the estate transferred the further sum of $32,749.49 as the residue. This made the total of Mr. Clarke's benefactions to the Clarke Institution $306,000, a sum far greater than ever before had been contributed by any one individual for the education or the relief of the deaf, and one of the largest ever given by an individual to one institution. According to Mr. Clarke's will the legacy of $256,000 was "to be held by said institution as a



JOHN CLARKE

permanent fund and endowment for the benefit of such branch of said institution as may be established or maintained in said Northampton."

In his annual report dated February 8, 1870, President Hubbard paid reverent tribute to the memory of "the founder of our institution and its early and constant friend.... Mr. Clarke was born, and always lived, in Northampton. By his industry and accuracy, his strict honesty and frugality, he accumulated a handsome property, from which he gave to the worthy objects of charity that were presented to him. From his modesty few were aware of the amount thus yearly bestowed. Before the death of his wife and only child, several years ago, it is known that he had for some years felt the importance of a school for the deaf in Massachusetts. His interest in this subject was probably first aroused by his own deafness, from which he suffered greatly during the last years of his life, and was strengthened by his acquaintance with Miss Dudley; but it was through the message of Governor Bullock to the general court in January, 1867, that the public first became aware of his intentions. Governor Bullock said: 'Assured as I am, on substantial grounds, that legislative action in this direction will develop rich sources of private benefaction, I have the honor to recommend that the initial steps be taken to provide for this class of dependents within our Commonwealth.'.... When it was first proposed to name the institution after Mr. Clarke he modestly declined, and suggested that it should be called the Massachusetts School. It was only after repeated solicitation that he gave his consent. As soon as the corporation was organized, in July, 1867, a committee waited upon Mr. Clarke, who expressed his readiness immediately to transfer to the institution the sum of $50,000. He imposed no conditions, leaving the disposition of principal and interest entirely to the discretion of the corporators. in 1868 he purchased a lot of land for the institution, but on learning that objections would be made to the location he sold it, without even offering it to the corporation. He always took great interest in the school, and was much pleased with the children and their progress....

"It has been voted to procure a likeness of our benefactor, to be hung in the school-room, that those who in future days may be blessed by his gift shall be taught to remember him to whom they are so deeply indebted, and that 'in coming years, when we shall have passed away, and our agency in this labor of love shall have been forgotten, successive generations of the silent restored to speech, shall articulate with gratitude the name of John Clarke of Northampton.' "

CHAPTER XII.

"THE BENEDICTION OF MANY HEARTS WILL FOLLOW HER."

For nearly twenty years Miss Rogers was the principal of the Clarke School. On her fiftieth birthday, April 12, 1884, she was the recipient of many valuable gifts from teachers and pupils and former pupils; addresses were made, congratulations extended and a memorial tree planted in front of Rogers Hall. During all those years Miss Rogers had been a sufferer from bronchial ailments, and, in 1885, she tendered her resignation as principal and spent the winter in Colorado. As her physicians expressed the belief that a year in the west might bring an improvement in health that would enable her to again assume the duties of principal, the corporation refused to accept her resignation. A year later her physicians decided that she could not live in the New England climate and continue at her important post. So she again tendered her resignation, which the corporation accepted on October 16, 1886. In severing this connection the corporation tendered to Miss Rogers "heartfelt sympathy" and recorded the following expressions of regret in the annual report dated October, 1886:

"This Institution has to lament the loss of its Principal, Miss Harriet B. Rogers, under whose able management for seventeen years, it has grown from a small beginning to its present prominence and prosperity. Subject to a bronchial infirmity at times, years before her connection with this school, in the summer of 1884 this infirmity assumed such a serious aspect that she was professionally advised to rest from labor and spend a year in Colorado. At the end of the year, it was still thought unsafe for her to resume work in our climate and her leave of absence was continued another year. The result was not encouraging, and she was then advised by several physicians that, while prolonged life and usefulness even were possible to her in Colorado, she could not long endure the climate of New England, and she tendered her resignation. Much as this Board regretted it, acceptance of the resignation seemed unavoidable. Of the continued salary which was voted to her first for one year and then for a second year, she availed herself only in part. This Board cannot forbear to express in this connection, their unfeigned regret at her constrained resignation, as well as their high and grateful appreciation of her long services, and of her unselfish devotion to the best interests of the Clarke Institution. Apart from the beneficence of its founder, they feel that to her wise administration mainly are due its present reputation and usefulness. But this Board is fortunate in having in the associate principal, Miss Caroline A. Yale, a person worthy to be Miss Rogers' successor. Her long experience in the school, her demonstrated ability, and her successful management as acting principal the past two years, are a guaranty that the institution will receive no detriment at her hands."

The following resolutions express the feelings of the corporators of the Clarke Institution at parting with Miss Rogers, more formally than was done in the preceding report:

"WHEREAS, The Principal of the Clarke Institution, Miss Harriet B. Rogers, under whose able administration for seventeen years, it has grown from a small beginning to its present prominence and usefulness, is compelled by physical infirmity to resign her position:—

"*Resolved,* That we accept her resignation only from necessity and with unfeigned regret, and that we assure her of our high and grateful appreciation of her long and faithful service, and her unselfish devotion to the best interests of the Clarke Institution.

"*Resolved,* That we tender to her our heartfelt sympathy in this trying arrest of her labors, and her isolation from a loved home and friends; but that we congratulate her upon leaving behind in the reputation and usefulness of the Clarke Institution, a lasting memorial of herself and her work.

"*Resolved,* That the foregoing resolutions be put on record, and that a copy be sent to Miss Rogers, to the Northampton newspapers and to the *Springfield Republican* for publication."

In her annual report for the year 1886, Miss Yale, as the acting principal of the Clarke School, wrote: "In submitting the report for the year ending August 31, 1886, we are deeply pained to record the continued absence of our principal, Miss Rogers.

With the close of the year, her official connection with the institution ceases. It seems fitting, were it possible, that there should be at this time some adequate recognition of her value not only to this institution but also to the cause of deaf-mute education throughout the country. From the opening of the institution until failing health forced her to resign her work this has been pre-eminently 'Miss Rogers' School' and abroad is usually so designated. *To no other single person does the cause of oral teaching for the deaf of America owe so much.* Steadfastly refusing to engage in controversy, she has left it to results to prove the value of her methods. To those who, through years, have been associated with her in the intimate relations of family and school life, her loss is irreparable. Her philanthropy has been world-wide in its outreach and her interest in every educational development unbounded. To her own work, her life has been given up with a devotion absolutely self-forgetting. This work, which she has done so faithfully, she is now forced to relinquish. Those of us who are left to go on without her may well pray to be found as zealous and faithful as she has been. We trust that for many years yet, we may be able to avail ourselves of her wise counsel and sound judgment. Wherever she goes, the benediction of many hearts will follow her. Her name will never cease to be a treasured household word in the school and family where for so many years she has been in deed, as in name, 'The Principal.'"

And the editor of the *American Annals of the Deaf*, in announcing the retirement of Miss Rogers from active service, wrote: "The services that she has rendered to the Clarke Institution and to the cause of articulation teaching in America, *in which she was the pioneer*, can never be forgotten; while the fairness and friendliness with which she has looked upon all earnest efforts to advance the welfare of the deaf, however much they might differ in method from her own, have made her generally esteemed and beloved. We all rejoice in the noble work she has done and feel sincere regret that she is obliged so early to relinquish it."

The high esteem in which her opponents in educational methods held Miss Rogers, was indicated in many official actions. For instance, in August, 1872, she was elected vice-president of the National Conference of Principals of Institutions for the Deaf and Dumb, at the convention held at Flint, Michigan, an office she held for three years. Then from January, 1880, until her retirement in March, 1887, Miss Rogers was a member of the standing executive committee of the Convention of American Instructors of the Deaf. She was a welcome participant in the discussions at the respective conventions, even though a majority of the delegates did not then favor the teaching of articulation and speech-reading. The Oral Section of the fourteenth Convention of American Instructors of the Deaf, held at Flint, Michigan, in July, 1895, transmitted, by resolution, "loving remembrance on behalf of this section .... in recognition of the personal worth and professional labors of Miss Harriet B. Rogers, first principal of the Clarke Institution." And on May 9, 1899, at the Quarter-Century Anniversary of the National Deaf-Mute College in Washington, the honorary degree of Doctor of Humane Letters was conferred on Miss Rogers, "as also on several others eminent in the education of the deaf in this country and abroad."

At the World's Congress of Instructors of the Deaf, held at Chicago, in 1893, Dr. A. L. E. Crouter, principal of the Pennsylvania Institution for the Deaf and Dumb, in a valuable contribution on "Statistics of Articulation Work in America," in which he gave Miss Rogers due credit for the very important part she played in "this tremendous reversal in methods of teaching the deaf," testified that from her school "have gone out many trained teachers to do willing missionary work in other fields, and an influence favorable to speech and speech-teaching that seems to be boundless in its potentiality and resistless in its all conquering march."

On May 3, 1886, Miss Rogers, while in Boulder, Colorado, wrote to her colleagues, that her physician was not willing to assume the responsibility of her taking a trip to the coast to attend the eleventh convention of the American Instructors of the Deaf, to be held in California, and that she "was unwilling to do anything that might hinder recovery and so prevent returning to work in the autumn." But she urged that official action be taken dropping the words "and dumb" from the name of the *Annals*, and from the title of the convention. Mr. Fay recommended that the convention "change the name of their periodical from *American Annals of the Deaf and Dumb* to *American Annals of the Education of the Deaf.*" The records show that "the committee acted favorably on the suggestions of the editor and of Miss Rogers, and now recommend that hereafter the *Annals* be called *The American Annals of the Deaf*, and that the convention assume the title of 'The Convention of American Instructors of the Deaf.'" The committee's recommendations were unanimously adopted.

In his annual report for the year ending September 1, 1875, Mr. Hubbard wrote: "It is very generally believed that the system of instruction in the Clarke Institution is modeled upon that of the German schools. It is therefore due to Miss Rogers to say that when our school was started, she knew only the fact that, in Germany, the deaf were taught by articulation. She visited several European schools in 1871, studied the methods pursued, and adopted such ideas as she thought of value to our Institution."

In 1870, again in 1871, and during several following years Mr. Hubbard visited many of the Continental institutions for the deaf, as well as those in England, to gain ideas and suggestions that would enhance the value of the oral method employed at the Clarke school. In this manner he freely contributed several thousands of dollars to the promotion of the education of deaf children. On July 8, 1871, Miss Rogers sailed for England to visit the schools for the deaf there and in Europe and remained eleven months. Finding the London institutions closed for the summer vacation, she went direct to Germany and devoted two months to the study of the German language and to local trips. Then she went to Vienna, where she remained until the following February, daily visiting a private school having a dozen deaf pupils, and also the Jewish institution, carefully observing the methods of instruction, and sending home helpful suggestions each month. She spent the month of March in Italy, and then went north, visiting institutions in Switzerland, Holland, Germany and England, and sailed for home May 16, 1872. In her official report she wrote: "With a single exception I was everywhere received with great kindness, and in some cases with marked attention.... Of the twenty-two deaf-mute institutions visited, fifteen employ the German, and seven the French system. No one of the fifteen uses the manual alphabet, the Berlin Institution having now relinquished it. Seven of these use but few signs; two or three employ little more than a few natural signs in early instruction. In the other institutions pursuing this system, there seems to be little uniformity in the use of signs, some teachers using a great many, while others in the same school consider them a hindrance and make very little use of them.... I know of no school in Germany using the French system."

In June, 1884, Miss Rogers, in reply to the question whether she believed that the best place to learn methods of articulation was in German schools, replied, "I have preferred, instead of getting all my ideas on methods of instruction based on one school or one country, to get from all countries and from all schools. I visited some of the best German schools and got some very good ideas in 1872, but I should not wish to be bound by the methods taught in any one school whether in Germany or in this country."

At the close of the school year, in 1882, in commenting on the letters received from former pupils and from parents and friends of pupils, Mr. Sanborn said: "We may have every reason to be encouraged in the difficult work that Miss Rogers and her associates have here undertaken. For we wish you to understand that this little empire on Round Hill, like the great British empire, is governed by a woman; and that the work done here has been almost wholly by women. The gentlemen of the Corporation and those who manage the pecuniary affairs of this Institution, are only too glad to commit the management of these children and the incessant task of their education to the patient hands, the active tongues, and the conscientious fidelity of women, without which we could never have hoped for success...."

In April, 1904, Miss Rogers visited the Clarke School on her seventieth birthday, and at the request of officers and pupils held an informal reception during the afternoon. She often remembers the school with gifts, but on this occasion she presented "a box of valuable books from her own library and a birthday gift of money to be expended for the school." Miss Rogers was also successful in securing for the school a legacy of two thousand dollars from the Robert Charles Billings estate, to constitute a fund the income of which is to be used for the general purposes of the institution.

Miss Rogers was born in Billerica, April 12, 1834, and is now residing in North Billerica, the Massachusetts town in which for a year she taught her first deaf pupil. It is needless to say that she is beloved and revered by hundreds of her former pupils, by all friends of the deaf and of the cause of their sensible education, and surely, wherever she goes the benediction of many hearts follows her.

CHAPTER XIII.

GRACEFULLY SWINGING INTO LINE.

During the decade following the establishment of Clarke School, Mr. Hubbard, Miss Rogers and their efficient co-laborers probably often recalled that lost beatitude: "Blessed be the knocker; the hammer maketh for intelligence." Many of the blessings deaf children now enjoy might not have been won, had the hammer not been sturdily wielded by those who were so constituted that they would not understand Mr. Hubbard's motives and purpose; and, in turn, wielded by Mr. Hubbard in exposing the fallacies of the sign-schools.

Truly, it was far better that the oral method should be reviled in its inception, rather than ignored, more especially as "those of us who opposed articulation did not know anything about it," and, on account of "our preconceived ideas" concerning the true and "the only way." For had its heretical advocates not been publicly branded as "visionary," "cruel," "criminal," and as "charlatans," the public might never have known that here was an opportunity to line up on one side or the other, and thus the oral movement of 1864-1867 might have perished of inanition, instead of proving its worth by revolutionizing existing educational methods.

Both Mr. Hubbard and Miss Rogers were just as artistic knockers as all great revolutionists have ever been. But never before did two co-laborers use the hammer so differently. Miss Rogers studiously refrained from participating in any discussion concerning the merits of either system. Her time was devoted to the development of her pupils, and the results were the trenchant blows that she gave her opponents. Mr. Hubbard, on the contrary, lost no opportunity to publicly proclaim the value of the oral method, and, in using the public press for this purpose, he was ably seconded by Mr. Sanborn who fought shoulder to shoulder with Mr. Hubbard.

After the Clarke School was well under way, not many months passed before the opponents of the oral method began gracefully to swing the hammer for—rather than against—the oral method. So great a public interest in the education of deaf children had been aroused by the publicity given the many hearings before the legislative committee in 1867, that, even before that committee submitted its report to the Senate, the most eminent representative of the sign-schools, Dr. E. M. Gallaudet, president of the National Deaf-Mute College at Washington, started for Europe to learn through personal observation just what progress oral teaching was actually making in the Continental schools, so often referred to during the hearings. He spent six months abroad, visited more than forty institutions and schools, returned to Washington, and on October 23, 1867, recommended that "instruction in artificial speech and lip-reading" be entered upon in his own college "at as early a day as possible."

Dr. Gallaudet's recommendation carried with it a peculiar significance, in that his college is under the direct supervision of the United States authorities, and though a progressive institution in many ways, and the first Deaf-Mute College established in the world, yet little had been done towards teaching speech to deaf-mutes, or even to semi-mutes, until Gardiner Greene Hubbard forced the issue in Massachusetts.

So strange a condition of affairs as our Government maintaining an educational institution in which speech was not taught, is explained in Dr. Gallaudet's very frank statement, made many years after he had recommended that speech be taught in the institutions under his charge. He said: "During the first years of my work as an educator of deaf-mutes I believed, in common with the teachers of all the American schools for the deaf then existing, that the teaching of speech was of little value to the deaf as a class, and that its general introduction into our schools was undesirable."

Furthermore, Dr. Gallaudet was on record in New England as follows: "To the mass of the deaf and dumb articulation is unattainable, save in degrees that render it comparable to those sculptures and paintings that never find a purchaser; to books and poems that are never read; to music that is never sung. Involving much patient labor on the part of teacher and pupil, it exhibits only that limited degree of success which honest criticism is compelled to stamp as no better than failure. And yet, when the congenital mute *can master* oral language, the triumph of teacher and pupil is as deserving of praise as the achievement of true art, music, poetry or oration."

Dr. Gallaudet had also held that "the discussion or even the suggestion of an idea so impracticable" as "that this class of persons may with little difficulty, be educated wholly or in large part, in schools for hearing and speaking children,.... seems the height of absurdity."

Following his strong recommendation that articulation be taught in his own college, Dr. Gallaudet called a conference of the principals of American institutions for the deaf and dumb, "with a view of securing, if possible, a general adoption throughout the country of measures to give instruction in articulation to all deaf-mutes found capable of acquiring speech." In response to this invitation the principals of fifteen institutions met in Washington, in May, 1868, when Dr. Gallaudet addressed the members, in part, as follows: "The opinion exists in many localities that our system is susceptible of improvement; many persons of intelligence have an impression even that it is quite behind the age.... Our institutions may point with just pride to the record they have made of a half-century of effective useful labor in behalf of the class for whose benefit they exist. Their prestige is, however, today in peril. Institutions founded on opposing principles have sprung into life and are even now boldly claiming before the world that they are more worthy of public patronage than ours; that they will do more for the deaf and dumb than we are doing; that they have a better system than we; and not a few are willing to accede to their claims." Thus he urged the members not "to rest on the laurels of the past, and to cry innovation, charlatanism, quackery, humbug," but to "address ourselves seriously to the task of ascertaining wherein improvements in our work are possible, and then use all means in our power to realize these improvements."

After exhaustive discussion the conference compromised on the following resolutions, the second and fourth of which were offered by Dr. Gallaudet and the first and third by Rev. Collins Stone, as recorded by Dr. Gordon, who stated that two members voted against the first resolution, and that the remaining resolutions were adopted unanimously:

> "*Resolved*, That the American system of deaf-mute education, as practiced and developed in the institutions of this country for the last fifty years, commends itself by the best of all tests, that of prolonged, careful, and successful experiment, as in a pre-eminent degree adapted to relieve the peculiar misfortune of deaf-mutes *as a class*, and restore them to the blessings of society.
>
> "*Resolved*, That in the opinion of this Conference, it is the duty of all institutions for the education of the deaf and dumb to provide adequate means for imparting instruction in articulation and in lip-reading to such of their pupils as may be able to engage with profit in exercises of this nature.
>
> "*Resolved*, That while in our júdgment it is desirable to give semi-mutes and semi-deaf children every facility for retaining and improving any power of articulate speech which they may possess, it is not profitable, except in very rare cases, to attempt to teach congenital mutes articulation.
>
> "*Resolved*, That to attain success in this department of instruction an added force of instructors will be necessary and this Conference hereby recommends to boards of directors of institutions for the deaf and dumb that speedy measures be taken to provide the funds needed for the prosecution of the work."

Referring to these Resolutions in 1892, Dr. Gallaudet, in addressing the members of the American Association, said: "There are those here who understand what my position is in regard to the oral teaching of the deaf in this country, but I should be glad to have it known and remembered by all who are interested in this special work that I stand in the very forefront of those who have promoted this cause in America. I certainly was one of the first—I think I was *the* first—among the heads of the older institutions in this country to advocate the general adoption of speech-teaching, which I did in a report published twenty-five years ago, when I recommended 'that an opportunity of learning to speak and read from the lips should be afforded every deaf child.' "

But it was in 1870, at the seventh convention of American Instructors of the Deaf and Dumb, held in Indianapolis, Indiana, August 24-26, that Dr. E. M. Gallaudet took the firm stand "that the sign-language, in a school for the deaf and dumb, is a dangerous thing." He felt that the great question of that convention was: "Why the deaf and dumb do not master the English language?" And discussing that subject, he said: "I have listened to the paper which has been read this afternoon; as I listened to the paper read this morning, with a very great interest. I have followed the discussion as closely as I might, with no less interest; and I see, running through it all, the fact, which I am very glad to have acknowledged here so plainly in this convention, and which we have all to look in the face, that the deaf and dumb, as a class, do not master the English language. I take it, that is the confession of the discussion and of the article—that the deaf and dumb in our institutions, as a class do not master the English language....

"Now, what is the object of the instruction of the deaf and dumb? What is the principal object? I will leave out of view that great end of all education, which is to fit man for the companionship of his Maker, which looks to the world to come, and far beyond that which now is—for that is, or ought to be the grand, great aim of all right teaching—and I will take it, that the end of deaf-mute instruction, considered from an educational point of view, is to prepare the deaf-mute to live in a world of hearing and speaking people, and sustain himself. He is to be fitted to live in such a community; he is to be trained, while in school, so that he may be fitted to go out among hearing and speaking people, and maintain himself in all the relations of life. It is to work out the grand problem of a human life. What does he want first? What is the most important thing—the thing we use day by day in pressing our interests in the face of our fellow-men? What could we do without a more or less perfect mastery of the language of communication with them? The answer is patent. So the deaf-mute, when sent out to solve the problem of his human life, is to be furnished with those means that will enable him best to sustain himself and his own interests. In educating him we are giving him, as far as we may, certain things to enable him to make his way in the world. I do not defer to any one in my admiration of the sign-language. It is known to most of you that it is the language of my mother—I may say it is my mother-tongue. It is a beautiful language; I admire it. I admire the grace of it, the force of it, the rhetoric of it. I admire many things about it, and regard it as a beautiful language; but I must say that, for deaf and dumb children in school striving to master the English language, it is a very dangerous thing. That may be regarded as a strange utterance for me to make, but I make it advisedly. And why do I make it? Because the main object to be attained by the school-training of a deaf-mute child is to enable him, as far as you may, to master the English language. That done, other things follow, as a matter of course.

"Now, if one of you has a child whom you are anxious to have learn the French language, you know that the best means of giving it to him would be to place him or her in a family or in a school where French was commonly spoken. We know that if that child was placed in a school or in a family where nothing else was spoken, it would be but a very short time until it would learn to speak French, and that it would finally master the French language. Then, if we want the children in our institutions for the deaf and dumb *to master the English language, what have we to do with the sign-language?* I answer, *as little as possible.* I would not be misunderstood;—there are uses to which the sign-language is put that are invaluable; and, while I say that the education of the deaf and dumb child *may* be conducted without the sign-language, I do not say that I think it can be *best* done without the aid of the sign-language. But I would bear in mind every hour of the day and every moment in the hour, that the sign-language, in a school for the deaf and dumb, *is a dangerous thing.*"

The expression of these views met with strong disapproval and satirical comment, one eminent delegate saying: "I certainly desire as great an improvement in the method of teaching the deaf and dumb as any member of this convention, but I certainly do not wish to hear the instrument, that we have employed hitherto in accomplishing what has been done, called a 'pernicious' thing. There is no doubt that signs, after verbal language has once been acquired, may be used too much; the manual alphabet, writing, or, if you please, vocal speech should be employed, but, to say that signs are a nuisance, seems to me to be carrying the thing entirely too far."

Another delegate asked "if Dr. Gallaudet entertained these views nine years ago." Dr. Gallaudet replied: "I expressed these views before I left the Hartford Institution in 1856. I have expressed them repeatedly to individuals, but have not felt called upon to express them before in this public manner."

At this same convention, 1870, a representative from Wisconsin, felt moved by the spirit to read a paper on "Articulation as a means of Instruction," in which he clearly showed how slight a grasp sign-teachers had of the oral method. He said: ".... The experiment of teaching by articulation, which is now being tested so thoroughly, and has been for years in the different schools of the United States (sic), has not established the fact that articulation can be of any benefit to the deaf-mutes, excepting to a small number. Indeed, the belief that not more than one in eight or ten is able to be benefitted is as strong today in the minds of the educators of the deaf and dumb as at any former period. And hence, to exclude all other systems of instruction and employ one that can reach only so small a number would be anything but wise. While one pupil would receive an education, nine would grow up uneducated; while one would receive light, nine would continue in the dark. And again, it must be remembered that articulation, as a simple system of itself, would utterly fail in educating the deaf and dumb. It can not bring to the mind of the deaf-mute one intelligent idea; it can not add one iota to his knowledge or information; it can not bring the faintest glimmer of light to his darkened mind...."

At the same convention, a representative from Michigan held that "(1) After two years' experiment, we are confirmed in the belief that *it is* worth while to teach articulation to the *semi-mutes* and *semi-deaf* persons. (2) That it is *not* worth while to rely upon articulation as a means of imparting instruction. (3) That it is little better than a waste of time and money to teach articulation to congenital deaf-mutes. (4) That the language of signs is now and is likely ever to be, the sheet-anchor of those who succeed best in teaching the deaf and dumb."

Later Dr. Gallaudet said: "When we go into a company of deaf-mutes we find them almost invariably using signs. We know by experience that signs do not express those exact and beautiful divisions of thought that are expressed by language. The deaf and dumb, without themselves knowing it, lose a great deal of the apprehension of what ideas pass from mind to mind. When we come down to the nice distinctions of thought, the sign-language we know is not sufficient, and we should not flatter the deaf and dumb into thinking that it is. In order to rise to that high appreciation of thought which is attained by men possessing all their faculties, they must *possess* language."

And at the eleventh convention of the American Instructors of the Deaf, held in Berkeley, California, in July, 1886, Dr. Gallaudet presented the following resolutions:

"WHEREAS, The experience of many years in the instruction of the deaf has plainly shown that among the members of this class of persons great differences exist in mental and physical conditions, and in capacity for improvement, making results easily possible in certain cases which are practically and sometimes actually unattainable in others, these differences suggesting widely different treatment with different individuals: it is, therefore,

"*Resolved*, That the system of instruction existing at present in America commends itself to the world, for the reason that its tendency is to include all known methods and expedients which have been found to be of value in the education of the deaf, while it allows diversity and independence of action, and works at the same time harmoniously, aiming at the attainment of an object common to all.

"*Resolved*, That earnest and persistent endeavors should be made in every school for the deaf to teach every pupil to speak and read from the lips, and that such efforts should be abandoned only when it is plainly evident that the measure of success attained does not justify the necessary amount of labor."

These resolutions were unanimously adopted with the proviso added to the second resolution "that these children who are given to articulation teachers for trial should be given to articulation teachers who are trained for the work, and not to novices, before saying it is a failure;" and, also, "that a general test be made, and that those who are found to have sufficient hearing to distinguish sounds, shall be taught aurally."

Dr. Gillett has written that in "speaking of the sign-language at this time, Dr. Job Williams, than whom there is no more competent and candid expert in its use, says: 'It was a marvelous system, but there was too much machinery about it, and like all machinery of those days it was crude and cumbersome. Too much time was spent over the sign-language. It seems sometimes to have been regarded rather as an end than a means. The lever was mistaken for the load which it was intended to move. For example, in the teaching of language, instead of presenting the idea vividly in brief natural signs, and then turning it at once to written or spelled language, the idea was first given in free, natural signs, next in word signs in the order of the words, and lastly by signs in the order of the words, each word being accompanied by other signs indicating the part of speech, and giving its grammatical construction. After all this preparation came the written language for the idea.' "

And, in May, 1880, Dr. Isaac Peet, said: ".... When we used to have these great discussions as between the two systems, those of us who opposed articulation *did not know anything about it*, and when we came to study it, to analyze it, and experiment upon it, we became interested in it, and the relation it holds to a complete system of deaf-mute education...."

On the same occasion Dr. Peet also said: ".... I would say, too, that I do not think that a knowledge of the sign-language is an essential of the instruction of the deaf and dumb. I believe you can give a deaf-mute a perfect knowledge of the English language without using any more signs from first to last than you use with hearing and speaking children. All mothers make signs. Everything makes signs. Circumstances have signs. They call up analogies, and speech comes in in connection with circumstances and with analogies, so that the hearing child learns speech gradually from the connection of things, and from the gestures of the mother and of people around it, and sentences come out in connection with certain actions. All these things are well understood; but I would not say that the sign-language, as we use it in an institution for the deaf and dumb, is an essential to the acquisition of the English language, because it is perfectly certain that language can be acquired without the use of any signs."

Yet, notwithstanding that a few among the broader-minded leaders in the sign-schools publicly advocated, year after year, that every deaf child should be given ample opportunity to learn speech and speech-reading, upon Miss Rogers, Miss Fuller and Miss Yale and their co-laborers fell the brunt of the battle to influence public sentiment to perceive the incalculable value of the oral method in educating deaf children. One of the strongest testimonials of the masterly manner in which these honored women won for humanity this priceless educational blessing, is forcibly brought out in the remarks of the representative of the leading sign-school, who in 1893, twenty-six years after the Clarke School had opened its doors, said:

"Just think of a rich State with more than three hundred and fifty pupils in attendance at the State institution, and only three articulation teachers; of several other rich States, with more than two hundred and fifty pupils each, and only two articulation teachers, and of others, some with more than two hundred and some more than one hundred and fifty pupils each, and only one articulation teacher! Such provision as that for teaching speech is enough to bring the whole system of eclectic schools into utter contempt."

At that time, 1893, Clarke School had, besides others, fifteen instructors in speech and speech-reading, for one hundred and twenty-six pupils. And, holding that "it is the imperfections rather than the successes of a teacher's work that are impressed upon his own mind," Miss Yale said: "Standing at the close of the first quarter-century of oral work for the deaf in America, there is ample cause for regret that these imperfections have been so many and so great. Criticism and comparison from those without have only served to stimulate to better work; but low standards, ignorance of methods, and lack of skill on the part of the workers themselves have proved serious hindrances. Despite this, much has been accomplished. The number of pupils placed under oral instruction increases year by year; the standards of work are higher than they have ever been before,—better language, better speech, better voices, better lip-reading; and at no previous period have so many and so high a grade of teachers been employed in this work."

Mr. Hubbard found that the greatest drawback to the rapid introduction of the oral movement was the lack of competent teachers qualified for a work in which infinite patience, great adaptability, and a thorough knowledge of child-nature are essential qualifications. Yet, handicapped as it has always been by lack of a sufficient number of successful teachers, and by the antagonistic attitude so detrimental to rapid growth in progressive movements, the magnitude the oral movement has attained is clearly exemplified in the statistics of speech teaching in the United States in March, 1906, the latest available, showing that in one hundred and thirty-two schools for the deaf, there were 11,812 pupils, that in sixty-nine of these schools *every pupil* was taught by means of speech and speech-reading without any recourse to manual spelling or to sign-language. Then there were schools like the Mt. Airy, at Philadelphia, which had five hundred and ten pupils, four hundred and seventy-nine of whom were being taught speech and speech-reading, while with thirty-one manual spelling (the finger-alphabet) was also used, but no sign-language. The growth of oral work in this school during the twenty-six years, 1881-1906, inclusive, is presented in the following tabulation, which shows that in 1881, when a separate oral department was established (oral instruction has been given since 1870), nearly ninety per cent. of the pupils were instructed in the manual department, while in 1906 the membership was only six per cent.

Department	1881	1891	1895	1897	1900	1906
Manual	319	312	152	93	30	31
Oral	36	125	350	416	470	479
Total pupils	355	437	502	509	500	510

In July, 1891, Dr. Crouter said: "The way has been long, at times dark and dreary enough, but the experience gained more than compensates for the years of trial. We have learned that oral work contains in itself all that is highest and best of deaf-mute instruction, that its possibilities are limited only by time and labor, that it should be freely offered to every child deprived of its hearing. The time for doubt is gone and gone forever. Speech, God-given speech is the heritage of every child, and every child should be afforded the opportunity, the very best opportunity, to acquire it. Teaching it under the combined system is a good way if no other can be provided; teaching it and *by it,* in separate classes under the same conditions, is a better way; but teaching it in separate schools where all the conditions are most favorable is in my judgment the best way."

In July, 1896, thirty years after Miss Rogers had started the Chelmsford School, the American Association assembled for the Summer Meeting at the Mt. Airy School. In response to the warm welcome extended to the delegates, Dr. J. C. Gordon, then of Gallaudet College, said: ". . . . Let me commend to your respect and sympathy especially the active workers before you who are engaged, I am persuaded, in the most difficult field of human endeavor—the fullest possible development of the latent capacity of deaf and dumb children. . . . I submit to all,—was the outlook for the deaf ever brighter than it is today? An overwhelming majority of the deaf children in the five hundred schools throughout the world are taught to speak in the language of their parents."

Who can conceive of a richer crown for a woman's work, than to learn that within the lifetime of one generation, largely through her intelligent study, infinite patience, and ceaseless watchfulness, a majority of "deaf children are taught to speak the language of their parents." Surely such compensation have Miss Rogers and Miss Yale received.

The Illinois institution has employed articulation teachers since 1868, being one of the first to adopt the methods advocated by Miss Rogers. But not until the fall of 1893 was the oral department organized; and in the fall of 1897 the manual department became the manual alphabet department in which conventional signs were discarded for the finger alphabet. The rapid growth in the number of pupils attending the oral department, is shown in the following tabulation, it being borne in mind that the manual department conveys instruction not through signs, but in the English language through the medium of the finger alphabet.

Department	1893	1896	1898	1900	1905
Manual	492	413	316	250	98
Oral	0	80	215	296	346
Total pupils	492	493	531	546	444

In 1898, the late Dr. J. C. Gordon, then superintendent of the Illinois Institution, stated in his annual report: "In small schools, under superior teachers, purely oral methods of instruction, employing speech and lip-reading to the exclusion of signs, have been employed with a high degree of success. The teachers in these schools are convinced that the proficiency of their pupils is due in a very large measure to the fact that every species of sign-language, as distinct from the vernacular, has been ignored, if not completely suppressed at every stage of instruction. The same methods have been employed in large schools with fair success, the general educational results under favorable conditions surpassing the results obtained with similar material in schools relying upon a language of signs as the principal means of instruction. . . .

"Under proper instruction, if a deaf pupil can acquire the English language at all, he can acquire it best without recourse to a language of signs. The intuitive method properly used tends to clear away the mists of vague and busy thinking and to contribute to mental health and vigor. By this system the pupil is compelled to think, for he must have the thing before its symbol, the idea before the word, not perfectly perhaps, but more clearly than in a system which permits the deaf pupil to be deluged with signs before he comprehends their meaning, or before the ideas which they are intended to convey have arisen in his own mind.

. . . . .

"The mental development involved in the acquisition of speech by a deaf-mute, requires constant use and training of perception, memory, association, imagination, reason and will. It nourishes the fundamental powers of the mind and prepares them to respond to the stimulus of instruction. Living speech is the best preparation for the education of the deaf, as well as of the hearing child, and it is chiefly on account of its educational value that speech is given so much prominence under the present scheme of instruction in this school...."

In his annual report for the year ending June 30, 1902, Dr. Gordon wrote: "However imperfect the speech of the deaf may be as a means of communication with the outside world, the discipline and the knowledge gained in acquiring this speech, and the kind, quality and degree of mental development thus acquired, have an incalculable value in fitting the deaf-mute to master alphabetic language and to feel, think and act as an educated human being. A deaf-mute may be educated without speech; but in this day and age of the world such a one going forth from our schools is an anomaly, and he will always carry the marks of an imperfect education."

In 1899, Professor S. G. Davidson, (deaf), of the Pennsylvania Institution, in discussing the relation of language teaching to mental development and of speech to language teaching, during the summer meeting held at the Clarke School, said: "To summarize: Oral schools teach everything through the English language as the only adequate means for the expression of ideas and the development of the intelligence. They make speech the basis of instruction because of its value in interpreting language. They regard as of supreme importance the mental development of the child, and the work in both speech and language is directed to this end. And, in conclusion,—merely as an expression of my own opinion, based upon experience in language teaching at different times by signs, spelling, and speech,—I would say that the oral method, as practiced in the best institutions, accomplishes far more in the education of the deaf than is possible under any other method."

At the twenty-fifth anniversary of the opening of the Clarke School, Mr. Hubbard, in concluding his address on its founding and early history, said: "When we contrast the present with the past, and ask how this work has been accomplished, the answer will be, mainly through the efforts of Harriet B. Rogers and Caroline A. Yale. And so long as the names of Abbe Sicard and

Abbe de l'Epee in France, and the elder Gallaudet in America live—so long will they be honored as the founders of the Oral Method of Instruction for the Deaf in America."

On the same occasion Professor A. L. E. Crouter, principal of the Pennsylvania Institution for the Deaf, said: "The influence of the Clarke Institution in shaping methods of instructing the deaf has been very potent, more potent, in my opinion, than any other school in the country. Her influence has been more potent than even that of old Hartford, whose work we all so greatly admire, for Hartford wrought in virgin soil, while Clarke has been compelled to work in the face of adverse conditions against prejudice and established methods. She has outlived all opposition and has conquered for herself a most enviable position among the schools for the deaf in America."

At this same anniversary, Dr. Job Williams, principal of the American Asylum at Hartford, said: "I am glad to be here today. I am glad that the oldtime animosities have been superseded by most friendly feelings, and in behalf of 'Old Hartford' I extend to this school hearty congratulations and the right hand of fellowship." In his annual report for 1899, he wrote: "The teaching of speech has made great progress throughout the country in the last twenty years, and it has come to be universally recognized that a large percentage of the deaf can acquire a very useful amount of speech and lip-reading, and a smaller percentage can attain to ease and fluency in both." He had previously stated that "Any pupil who has mastered speech and lip-reading so far as to be able to carry on conversation in regard to the ordinary affairs of life in speech so plain as to be readily understood by the members of his own family, even though others fail to understand him, should be counted as a successful articulator and lip-reader."

Now, if this oral movement is of such immeasurable value to the present generation in opening the way for the intellectual culture of an afflicted class; if instruction by the oral method has transformed the once seemingly helpless into active, helpful and educated members of society, in the short space of the life-time of one generation, think how priceless the benefits will be to coming generations, whose instruction will begin in infancy, under a new generation of teachers, and when all need of conventional signs and gestures shall have vanished. Then try to estimate the value to present and to coming generations of all that Mr. Hubbard, Miss Rogers, Miss Fuller and Miss Yale have accomplished.

As was so wisely expressed at the 1899 Meeting of the American Association: "Mr. Hubbard was not the first to propose the introduction of the oral method here—he was not the first to open an oral school in this country. Others proposed the introduction before him, but they were unsuccessful; others opened oral schools, but the schools did not live. He was the first to succeed; and the living, growing oral movement of today, owes its inception to him."

CHAPTER XIV.

"MORE THAN TO ANY OTHER ONE MAN."

Until the close of his very busy life the welfare of the Clarke School was carefully guarded by Mr. Hubbard, and during the first ten years of its existence he served as its president. In 1877, came the pressure of the vast interests involved in the introduction and early development of that marvel of all inventions, the electric-speaking telephone, which prevented him from devoting to the interests of the Clarke School the time that he felt was justly needed. Therefore he resigned the presidency, but he remained an invaluable advisor and director until life ended.

When he passed away at his country home, Twin Oaks, near Washington, on Saturday, December 11, 1897, thirty-five years after his first efforts to establish the oral movement in Massachusetts, it was recorded that to Gardiner Greene Hubbard, "*more than to any other one man,*" do deaf children in America owe the priceless educational opportunities now freely open to all. The living, ever-expanding oral movement in America owes its inception and early development to his intelligent, persistent, personal efforts and his generous contributions of time and money. Thus it seems fitting that a brief biography of so eminent a national benefactor should here be presented.

Gardiner Greene Hubbard was born in Boston, on August 25, 1822. "His father, Samuel, an alumnus of Yale and a doctor of laws from Yale, Dartmouth, and Harvard, was an accomplished lawyer, and during his last years a member of the Supreme Court of Massachusetts. His grandfather, William, was a successful merchant. Back of this the family is English, its first respresentative in America being William Hubbard, a graduate of Harvard in 1642, pastor for thirty-eight years at Ipswich, Massachusetts, and historian of New England. His mother, Mary, was the daughter of Gardiner Greene, of Boston, one of the most prosperous and eminent men of his day."

Though never robust in health, Mr. Hubbard was an earnest student, and graduated at Dartmouth at the age of nineteen, then entered the Harvard law school at Cambridge, was admitted to the bar December 4, 1843, at twenty-one years of age; entered the office of Charles P. and Benjamin R. Curtis, leading lawyers of Boston, and successfully practiced his profession for years, being retained in a number of notable cases. Both Dartmouth College and Columbian University gave him a doctorate of laws.

On October 21, 1846, Mr. Hubbard and Miss Gertrude Mercer McCurdy, a daughter of Robert Henry McCurdy, of New York City, were united in marriage. Mr. McCurdy was the head of a leading dry-goods commission house from 1828 to 1857; was one of the founders and a trustee of the Mutual Life Insurance Company, trustee of the Continental Insurance Company; director of the Merchants Exchange Bank, and of the American Exchange National Bank; a member of the Chamber of Commerce, a member and a founder of the Union League Club; and he always took pride in having organized the Union Defense Committee at the outbreak of the war.

In 1855, Mr. Hubbard built the first street railroad constructed in this country outside of New York city, and thus connected Cambridge with Boston, the first car running from Charles street to Cambridge-port on March 26, 1856. In 1853, the Cambridge Railroad Company was incorporated by Mr. Hubbard and two associates, and the first locations in Boston were obtained on Cambridge, Chambers and Green streets on December 4, 1854. Cambridge was then, as now, the largest of Boston's suburbs, and an antiquated stage-coach was the only public conveyance between the two cities. While a coach was scheduled to leave each terminal every half-hour, during the business hours of the day, the service was uncertain and irregular, for the coaches would often founder in the muddy streets and the jolting the passengers had to endure was never forgotten. Thus the patronage was an uncertain quantity. Notwithstanding this wretched service Mr. Hubbard's street car line encountered great opposition outside of Boston, because there was "not sufficient patronage to support the stage line, and the investments will be wasted." Owing to the many mud holes in Cambridgeport, it was necessary to build anew the streets over which the line passed in order to secure a suitable roadbed, yet the residents repeatedly tore up the tracks at night. Six years after this horse railroad went into operation, a joint special committee of the common council were compelled by the facts to report that "we have a corporation alike creditable to our city for its system of efficiency as well as the standing and character of those employed on the cars, and the good quality and condition of the equipment."

Mainly through Mr. Hubbard's energy and resources, Cambridge was supplied with illuminating gas and with pure water several years before any other city in the vicinity of Boston enjoyed the use of either. In 1853, the Cambridge Gas company was organized and the streets were lighted with gas before the end of that year. Then, in July, 1855, the Cambridge Water works, of which Mr. Hubbard was president, began the construction of its plant and expended $196,480 during the next twelve months.

In the summer of 1860, the general impression among many in the North as well as in the South, was that war with all its attendant evils would be the inevitable price of slavery. Yet there were a few men in the North who were willing to risk even life itself to avert so terrible a calamity as a civil war. On July 24, 1860, Mr. Hubbard and Dr. Edward Norris Kirk left Boston for an extended journey through the South with the avowed intention of devoting "as much time as possible among slaveholders" in the hope that they might "bring to their attention considerations which in their circumstances they easily forget." Through certain southern states these two comrades traveled on horseback or in carriage during the exciting campaign which resulted in the election of Abraham Lincoln, a campaign in which partisanship ran riot. Yet, Dr. Kirk wrote: "Every one talks with us candidly and kindly on the terrible theme," and "we never have had a journey on which we have made so many friends." Think how charming a personality these men must have possessed, and how intelligently they must have handled the momentous subject, to have been so cordially welcome during that disturbed period.

During the years 1867-1876 Mr. Hubbard devoted much time to suggesting improvements in the telegraph service and strongly advocating governmental ownership. His reasons why the public would be better served if all telegraph lines were under governmental control and competing lines did not cause disturbing influences, are interesting, practical, and logical. In 1868, at the request of the Postmaster General, he furnished much data concerning postal-telegraph systems in foreign countries, and drew comparisons with conditions then existing in this country. On January 1, 1869, by request of Mr. Randall, he supplemented his first report by additional statistics of much value. Mr. Hubbard held that as the Western Union and other companies published no statement showing "the number of messages transmitted, no accurate statistics of their business can be given." He held that "there is no uniformity in the rates. They are often less to a distant station than to an intermediate one on the same line.... In other countries the rates are reduced with the growth of business and never raised. In this country they are reduced by competition, followed by consolidation of the competing companies, and subsequent increase of rates, without regard to the growth of the business."

Referring to the many competing telephone lines established during that period, Mr. Hubbard said: "Competition is the peculiar feature of the American system. This requires the construction of as many lines between the principal cities of the country as there are competing companies .... while the whole business might be transmitted on the lines of the largest company if their lines were properly constructed and kept in good repair. This increases the interest and dividend account .... The great competition which followed caused low rates; but messages between distant points having to pass over several lines, with an equal number of repetitions, were liable to many errors and great delays, and were frequently lost. As a natural consequence the business was transacted with little profit or satisfaction either to the public or the stockholders. Most of the companies failed, and were abandoned or sold for their debts, and consolidated with the few paying lines."

In his letter transmitting this report to the House, Postmaster General Randall gratefully acknowledged "the obligations

I am under to Mr. Hubbard for his valuable aid in collecting information, and his assistance in preparing this special report."

On November 25, 1869, Mr. Hubbard addressed the Board of Trade and Commercial Exchange, of Philadelphia, on his favorite subject of "The Postal Telegraph," strongly advocating the purchase of all telegraph lines by the government, and holding that to be "the only means by which the telegraph can be made the ordinary method of communication." During his address Mr. Hubbard illustrated the manner in which destructive competition in public-service functions works to the ultimate disadvantage of the public, and said: "Capital, operating expenses, repairs and maintenance, are greatly increased by competition. The opposition companies do a much larger business in proportion to length of wire than the Western Union Telegraph company, but their average rates are much less, and expenses much higher. An opposition company has great power to injure another company without any benefit or much loss to itself. The inevitable result of competition has been and will be the failure of the weaker company and its consolidation with the stronger; or an agreement for a division of the business; in either case the public is compelled to pay tribute in rates based on the combined capital. This excites renewed competition with the same results.

"There is no doubt, that although their lines are not as good as can be built, yet it would be better for the interest of the public to have these lines, offices and employees incorporated at once into the postal-telegraph system rather than to wait for the construction of better lines, which would have to be operated by experienced persons, and be subject to a strenuous opposition. The competing lines though of little value to their stockholders or the public, in opposition, yet, as part of an entire system, with their officers and employees become of great value and sources of large profit."

On January 18, 1871, Mr. Hubbard memorialized congress on the subject of a postal-telegraph system, in part as follows: "The undersigned visited Europe during the past summer and fall for the purpose of examing the postal-telegraph systems of Europe, and enjoyed peculiarly favorable opportunities of inspecting the operations of the telegraph, owing to letters of introduction to the post office officials of several countries, kindly furnished by the Hon. Mr. Creswell, our postmaster-general.... While the Continental system is greatly superior to the American in some respects, in others it is decidedly inferior. London, where a large number of new offices have been recently opened, is the only place in which the facilities will compare with ours. It has 285 offices to a population of nearly 3,500,000, while New York, with 900,000, has about 75 offices, and transmits daily many more messages, in proportion to population, than London.... It would cost several millions of dollars to put the lines of the Western Union Telegraph company in a condition equal to those in Europe. Such an expenditure would consume the earnings for several years, and would prevent the payment of dividends. There is not sufficient inducement to make such an outlay of capital while competing companies operate lines between the large cities and receive an income which would enable *one* company to pay dividends on the capital required for the improved lines. The Western Union Telegraph company is therefore compelled to make limited repairs and extensions and pay small dividends. The officers of the companies are fully aware of the conditions of their lines, and have greatly improved them since they assumed the management. Twice as many messages are now transmitted between the East and the West as were sent four years ago over the same wires; but no permanent improvement, insuring certainty of prompt transmission at low rates, can be expected until *all the lines are under the control of one management*, and *the money now wasted in competition is expended in repairs and extensions*.... The advantages of the European system are the low cost of lines, superior quality, *freedom from competition*, low rates for inland messages, and its more extended use for social and ordinary mercantile business. The advantages of our system are the greater facilities afforded, its more extended use for certain kinds of business, and by the press. The postal system for America should combine the advantages of each. A new telegraphic system for our country, which simply copies that of any other must fail, so different are the habits and business of different countries. It is necessary to study the wants of those who use the telegraph, combine the best features of our own and foreign systems, avail ourselves of the services of the efficient executive officers of our companies and their skilled operators, and with our fine climate we may expect in a few years to have the best and cheapest telegraph in the world. . . ."

This memorial, covering thirteen pages with an appendix of seven pages containing tabulated matter showing comparative rates, methods, etc., remains a model for all fair-minded advocates of governmental ownership of the telegraph lines.

On February 19, 1873, Mr. Hubbard again memorialized congress "in relation to the postal-telegraph," and, in reply to certain statements made by Mr. David A. Wells, on the "Relation of the Government to the Telegraph." Mr. Hubbard claimed that "experience shows that telegraphic management in private hands does not result in either economy or efficiency of service to the public. Whatever economy may be practiced goes to swell the dividends of the stockholders, and not to reduce the rates, and to that economy the completeness of the service and the convenience of the public are sacrificed. When it is argued that, because private enterprise can be more economically managed than public, therefore the telegraph should be left to its managers, it should be remembered that the same self-interest which induces a private corporation to get its work done as cheaply as possible also impels it to get all it can out of the public. It is a sword that cuts both ways—one way to the advantage of the company, and the other to the disadvantage of its customers."

Mr. Hubbard prepared an able though popular presentation of the entire subject, which he contributed to the *North American Review*, for July, 1873. Therein, he marshalled a careful analysis of the then prevailing methods of telegraph companies, and strongly advocated the establishment by our government of a postal-telegraph system. It is worthy of note that he always showed due regard for the property rights of others, and never advocated action that might prove to be virtually a confiscation of existing property, nor action that might develop destructive competition. This is clearly brought out in his statement that "the postal system recognizes the rights of property in the owners of the existing lines, proceeding upon the ground that to make any new plan successful it must avail itself of the services and co-operation of the present able managers; that this can only be accomplished by paying liberally for the property it purchases of them, and that it will be much more advantageous to the public to secure this harmonious co-operation even by paying a large price for the property, than to establish a system at a very much smaller price, but in competition with the Western Union Telegraph company."

While congress has never sanctioned a postal-telegraph system, through Mr. Hubbard's earnest efforts, "day rates were reduced, a night service established in many places, and improvements made in the entire service." And it is of record that "the late president of the Western Union company said he (Mr. Hubbard) had done more than any other man to make the service of that great corporation popularly available."

After the same manner and for more than twenty-five years, Mr. Hubbard was an earnest advocate of practical improvements in the postal service, and he spent much time in studying its needs.

In 1868, Mr. Hubbard held that "the conditions essential to the success of the post are celerity, certainty, and secrecy in transmission, low and uniform rates and ample facilities for the reception of letters, and the speedy delivery of the mail. Private enterprise might transmit and deliver the mail between large cities at rates lower than those charged by government, but the reverse would be the case between smaller places, and as the majority live in the country, the few would be benefitted at the expense of the many." He urged the importance to the business community of earlier and later and more frequent deliveries in the residence district, especially in the suburban sections, of a decrease in the fees charged for money orders, and of a postal-telegraph system.

How earnestly and intelligently he labored to bring about these improvements, is shown in his admirably clear exposition of the need of progressive extensions that would keep pace with the growth of the commercial and industrial interests, presented in the *Atlantic Monthly*, for January, 1873, under the caption: "Our Post Office." Over twenty years after its appearance, Mr. Spofford publicly called attention to "its great and permanent value," and stated that it "contains an admirable condensation of the facts regarding the postal system of the United States and its predecessors, the Colonial and British post-office establishments. It draws many instructive parallels and points out the departures from the true objects of a governmental postal system, *the quick and cheap diffusion of the people's correspondence and periodicals*, through the carriage of mere merchandise in the mails, leading to large annual deficits."

It is said that it was the admirable character of this masterly presentation in the *Atlantic Monthly* that led President Grant, in August, 1876, to appoint Mr. Hubbard chairman of a committee "to examine into the subject of transportation of the mails by railroad companies, and to report such rules and regulations for such transportation, and rates of compensation therefor, as shall, in their opinion, be just and expedient, and enable the department to fulfill the required and necessary service for the public." And, by an Act of Congress, approved March 3, 1877, this commission "were authorized to continue and complete the service required of them and to include an examination of mail-service otherwise than by railroad."

For ten years Mr. Hubbard was a member of the State board of education, and was successful in introducing many improvements. In 1876, he was placed in charge of the Massachusetts educational exhibit at the Centennial exposition. Then, in 1877, he launched Dr. Bell's electric-speaking telephone on its marvelous commercial career, for he believed in its industrial value at a time when others regarded it as merely a scientific toy; he foresaw the wonderful growth of a service yet to be created; he perceived its inestimable value to all branches of commerce and industry, and the revolutionizing nature of its function; and his firm faith in its rich possibilities for both investor and user sustained him when ridiculed by friends and scoffed at by financiers and business men whom he tried to interest in what they contemptuously cast aside as "Bell's toy." Yet more swift was the progress of this newly-created art of telephony than was ever recorded in any other industry, and none ever had to face such peculiar, ever-changing, ever-expanding demands. It was Mr. Hubbard who laid the foundation of the vast transcontinental telephone system that is now winning unstinted praise from the leading telephone engineers in foreign countries. He it was who spent several years in foreign lands organizing telephone companies, introducing the system, and obtaining valuable concessions, yet nowhere do we find a trace of speculative entanglements, of modern stock-jobbing or of frenzied financial scheming in any form. On the contrary, the securities of the telephone systems Mr. Hubbard planned remain to this day safe, remunerative and desirable investments.

Returning to the United States he removed his residence from Cambridge to Washington, that the health of his family might benefit by the influence of the milder climate. Soon he became a leader in every movement to promote public welfare in that city, and no home in Washington was more famous for its charming and constant hospitality. It was a joy to him to share with others the knowledge he had gained concerning other countries. On May 9, 1896, he delivered a lecture in the assembly hall of the United States National Museum, on "The Japanese Nation—A Typical Product of Environment," that is of peculiar interest in view of recent events. Among other good things, Mr. Hubbard said:

"Among all countries of the earth, none have made such wonderful and rapid progress in form of government and in the development of industries and commerce and such great changes in its conditions of environment as Japan. The country which twenty-five years ago was almost unknown, has come forward to take its place not only as the foremost of oriental powers, but in the sisterhood of nations. They are the French of the East, their artistic instincts and their ingenuity in the use of machinery make them the competitors of Europe, particularly in specialities. Their profits are so large that their industries will increase with greater rapidity every year. Japan as a nation possesses an individuality stronger than our own. Our power of co-operation and organization of men and capital into corporations gives to us a certain advantage, but even this corporate organization they are rapidly acquiring. Japan is not only the foremost nation of the East, but her civilization compares in many ways favorably with that of Europe."

When Mr. Hubbard's earthly work ended, on December 11, 1897, the honored titles of "the most useful citizen of Washington," and "its first citizen in civil life," were justly conferred. The eminent workers in many professions who joined in "paying tribute to his high character and the commanding influence of his noble life," at the memorial meeting held in the city of Washington, on January 21, 1898, under the auspices of the National Geographic Society, emphasized the statement that "the scientific world of the American capital lost its best friend in the death of Gardiner Greene Hubbard."

At that meeting Miss Caroline A. Yale, LL. D., principal of the Clarke School for the Deaf, and vice-president of the American Association to Promote the Teaching of Speech to the Deaf, told of Mr. Hubbard's efforts to start the Chelmsford and the Clarke schools, and of "the enthusiasm with which he assisted in the formation and the upbuilding of the American Association, an organization designed to aid schools for the deaf in their efforts to teach speech by training teachers and by disseminating information in regard to methods of speech-teaching.... He was its first vice-president and the wisdom of his counsel and the strength of his purpose have done much to guide the Association through the difficulties of its first years of work and to give it the position which it now holds as the most influential and effective organization connected with the education of the deaf in this country—probably in the world—its membership including, in addition to a large number of teachers, many other persons like Mr. Hubbard and Dr. Bell, who are most effective promoters of the work of the Association...."

Dr. George M. Sternberg, surgeon-general of the United States Army, and acting president of the Joint Commission of the scientific societies of Washington, stated that "Mr. Hubbard was elected president of the Joint Commission at a time when this organization was in a state of unstable equilibrium, due to differences of opinion as to the nature and extent of the powers which should be conferred upon it by the several societies whose governing boards constituted its membership.... We owe much to his skill as a presiding officer, to his practical methods of dealing with business matters coming before the executive committee, and to his cordial sympathy with the objects in view...."

Prof. S. P. Langley, secretary of the Smithsonian Institution, told how ".... among the many occupations of Mr. Hubbard's varied life there were few in which he took more interest or was more zealous in than in his duties as regent of the Smithsonian Institution...."

Honorable William L. Wilson, president of Washington and Lee University, ex-postmaster-general, and member of the executive committee of the board of regents of the Smithsonian Institution said, ".... Now that Mr. Hubbard has gone from us forever, we begin to realize how large, how unique, and how beautiful a part he bore in the social, charitable, and intellectual life of his adopted city.... The Congress of the United States chose him a regent of the Smithsonian Institution. His associates on the board made him a member of its executive committee, charged with a personal supervision of this institution and of the scientific department which Congress had placed under its administration...."

Dr. Alexander Graham Bell said: "Mr. Wilson has referred to the philanthropic spirit of Mr. Hubbard and I will invite your attention to a philanthropic work of his that was unique." Then he related Mr. Hubbard's successful efforts "to establish a school where deaf children could be taught to speak and to understand speech...." and called attention "to the magnitude of the work that has resulted from those efforts. Last year (1897) there were more than 5,000 deaf children in the schools of the United States learning to speak and to read from the lips. There were over 3,600 pupils who were taught by the oral method alone, without resort to alphabets or the sign language.... There are three great results that were originated by the movement of 1864: First, the teaching of speech to the deaf; second, lowering the age of instruction to the deaf (at that time no attempt was made to teach deaf children under 12 years of age), and last, but not least in importance, the *employment of women as teachers of the deaf*. Before that time the instructors were largely men; but the necessity of teaching speech to the very little child led to the employment of women. This fact and the improvement in the methods have been the secret of success in teaching speech to

"This journal was specialized in five departments: First, there was editorial comment on public affairs relating to the institutions of research in America; second, its columns were open to the discussion of scientific subjects by the leaders of thought; third, it was a medium for the announcement of discoveries; fourth, it contained announcements of what men and institutions were doing in America; and, fifth, it contained a summary of the scientific progress of the world. In these five departments the two volumes of the first year contained a well-digested summary of the current scientific thought and accomplishments in America and throughout the world. This journal was called *Science;* and it had engaged in the labor of its preparation many men in the different departments of research employed in the preparation of materials for publication relating to all branches of work. It inaugurated the new era in America. Hitherto men had worked largely in isolation, without the sympathy and assistance of their fellowmen; few of them meeting once or twice a year for conference as the American Association for the Advancement of Science and the National Academy; but in the general isolation diversities of opinion sprang up and grew to unnecessary proportions, so that the infrequent meetings of scientific bodies were characterized by bitter discussion which often led to lifelong antagonism. Under the ægis of this journal there sprang into existence many more organizations, and the meetings of scientific men were multiplied and the differences of scientific men were harmonized; ultimate differences of opinion were modified and mollified and *the whole spirit of research as exhibited on this continent was transformed;* jealousies and antagonisms melted in the sunlight of publication. In the host of scientific workers there has always been a few men exploiting on the verge of research whose chief delight is in controversy and who consider that eminence can best be acquired by attacking their fellowmen. This modicum of malcontents was speedily relegated to the purlieus of disputation and the real workers remain to co-operate, encourage, and assist.

"Since 1883, the journal has passed through many vicissitudes, and many experiments have been made with it in order that it might become self-supporting, and many efforts have been made to secure an enlarged clientage, but the first three volumes established the high-water mark of scientific journalism and are ideals for all future enterprises in this field. In this manner the founders of the journal, led by Mr. Hubbard, contributed to the organization of scientific research. In later years I had the honor to be called into their councils, and I know how earnestly they labored to make a magazine worthy of the scientific public, and wherein there was failure and wherein there was success. Mr. Hubbard was the leading spirit in all this work and to it he gave much time and profound thought. It was designed, not as a business enterprise, but as a contribution to science; not for the purpose of accumulating a property from which a revenue could be derived, but of establishing a means of communication for scientific men, to be presented to them as their journal.

"In the library on Connecticut avenue and under the shadow of Twin Oaks, Mr. Hubbard was wont to assemble his friends in conference on scientific subjects; often the magazine was the theme under consideration; other interests of science were also considered. The hours which he spent with his friends in consultation from day to day, month to month, year to year, endeared him to an ever-enlarging circle of public men, for his sympathies were wide, his plans large, and the resources of his genius great, and, though he has gone, the works of his heart and mind remain to bless mankind."

Honorable A. R. Spofford, assistant librarian of the Congressional Library and vice-president of the Columbia Historical Society, told of Mr. Hubbard's "election as first vice-president of the society," of his "life-long interest in historical subjects," of his throrough and analytic method of presenting a subject for discussion, of his earnest labors in improving the postal service, of his love of books and of the graphic arts, stating that Mr. Hubbard's "large collections of early and late engravings, etchings, etcetera, was one of the finest gathered by a private individual."

Honorable John W. Ross, chairman of the Board of Commissioners of the District of Columbia, on behalf of the city of Washington and the District of Columbia, paid a beautiful tribute to Mr. Hubbard's zeal, sincerity and patriotism in all matters affecting the welfare of his adopted city, saying, ".... Amid ail the cares and responsibilities which attended his useful life, Mr. Hubbard never evaded any municipal duty. While he never sought preferment by the appointment of the executive officers of the District, yet his practical ability and his zeal were so generally recognized that successive boards of District Commissioners appreciated the fact that they served and promoted District interests by appointing him to positions of trust and responsibility. In May, 1896, he was selected as a member of the Tennessee Centennial Exposition commission. In June, 1896, he was chosen a member of the board of trustees of the Free Public·Library. In March, 1897, he was appointed one of the commission for the Omaha Exposition of 1898. He was also an active member of the board of directors of the Central Dispensary and Emergency Hospital. The duties pertaining to these positions were willingly assumed by him, notwithstanding his exacting engagements to the scientific societies of the District; and in so far as any work could be done, it was performed by him with fidelity and ability.

"Next to the great cause of scientific research, he loved his adopted home. There was not a movement made having for its end the prestige, the adornment, or the development of the National Capital which did not have his strong and sturdy support. From his beautiful home on the heights beyond Rock Creek he had within his view that ideal site bounded by the Potomac, the Anacostia, and the commanding hills which border those streams whereon the wise foresight of Washington founded the chief capital city of the new world....

"In the decease of Gardiner Greene Hubbard, therefore, the people of this municipality have suffered a grievous loss and bereavement. It may not be unfair to the living to state that there is no one quite so well fitted by temperament, by training, and by practical tact and ability to perform all the several roles on the stage of human activity which he enacted so well. His tall and commanding form and the kindly tones of his voice will be missed wherever Washingtonians may assemble to foster and protect the best interests of the District of Columbia...."

General A. W. Greely, chief signal officer of the United States Army, and senior vice-president of the National Geographic Society, spoke in behalf of that Society, saying, "When I first came to know Mr. Hubbard his years were such as had well won a right to rest, but with noble discontent he held the creed, 'Old age hath yet his honor and his toil.' How great that toil it has been for few to know; how great that honor in some way we felt before death touched him, but its full extent has only been revealed by this notable memorial meeting in the capital city of the Nation, of which he was so proud. The school, the library, the university, the Smithsonian Institution, the church—in short, all the varied elements of a Christian civilization, in which he was not only an actor but an inspirer—are distinct losers by his death. It is, however, the National Geographic Society that has a right to feel itself specially bereft, for this society was the child of his old age, which had won his heart, for which he toiled at all seasons, and towards which, last of all, turned his thought and affection. His last months were filled with plans for the fit celebration of our tenth anniversary, which now lacks so much by his absence, but which also seeks inspiration for the future by a brief review of the past. Mr. Hubbard was not only our president for these ten years, but he was also an initiator and an incorporator of the society. At the original meeting, on January 13, 1888, there were present thirty-three individuals, who have increased to an aggregate membership of 2,421, of whom remain with us 1,572, the loss by death and resignation being 849. In his introductory address of February 17, 1888, Mr. Hubbard set forth the aims and objects of the society on broad and generous lines, thus insuring growth and success. He said, 'I am one of those who desire to further the prosecution of geographical research. We hope to bring together, first, the scattered workers of our country; second, the persons who desire to promote their researches.' "

General Greely then touched upon much that the society had accomplished and of the establishment of *The National Geographic Magazine*, the official organ of the society, and added, "Finally, we have a right to ask, Could any organization in the first ten years of its existence more fully carry out its initial plan than has this society? In deserving and winning this success no other member did so much as did Mr. Hubbard. Dealing with a board of managers composed of able but positive men, it was Mr. Hubbard's strength that he was receptive, conciliatory, and practical. Many a seemingly hopeless idea he changed into practical form, and often from conflicting opinions he evolved an acceptable plan. It would be placing Mr. Hubbard's labors on a low plane to say that this society throve only by them. He had the higher aim to interweave his labors with others, and so to plan and build that he might exert an enduring influence. This higher work he accomplished...."

In the issue which appeared immediately after the death of Mr. Hubbard, the editor of the *National Geographic Magazine* paid this tender tribute to the man who unselfishly had done so much towards helping "to promote special researches by others and to diffuse the knowledge so gained among men so that we may all know more of the world upon which we live," to use Mr. Hubbard's own words. ".... While the Joint Commission of the Scientific Societies of Washington mourns the loss of a many-sided and broad-minded president, the Smithsonian Institution a most active and sagacious regent, the Columbian University a generous and indefatigable trustee, and other educational, patriotic, and benevolent institutions of the national capital a liberal benefactor, a wise counselor, or an earnest co-laborer, it is in the National Geographic Society and its work that the most conspicuous gap has been created. The president of this society from its foundation, Mr. Hubbard was enabled by a combination of circumstances as exceptional as it was fortunate, to sustain a relation to it that is probably without a parallel in the history of scientific societies. It is no new thing for such societies to enjoy the benefactions of wealthy and generous patrons and the inestimable advantage of the wise counsels of far-seeing and judicial-minded advisers concurrently with the inspiring influence of men of the broadest culture and the most progressive ideas. Rarely, if ever before, however, have these qualities and functions been united in one individual, or has there been so singularly varied a capacity for usefulness as was given to Mr. Hubbard and as he exercised to its fullest extent. The loss to the National Geographic Society is for this reason an irreparable one, and the ordinary expressions of regret seem cold and conventional...."

Dr. Edward M. Gallaudet, president of the Columbia Institution for the Deaf and Dumb, made the following report to the Convention of American Instructors of the Deaf, of which organization he was the president: "No man in America has stood more earnestly for the cause of teaching the deaf to speak than Mr. Hubbard, and his influence has had much to do with the present general acceptance of this feature by the older schools of the country, in which for many years it had no place. More sanguine than the majority of the teachers of the deaf as to the proportion of deaf children that may be successfully educated under the oral method, Mr. Hubbard never laid himself open to the charge of unreasonable partisanship, but held the respect of all as a sincere promoter of what he believed to be the methods most helpful to the deaf as a class. Attending many gatherings of instructors of the deaf, Mr. Hubbard won the warm regard of every member of our profession who had the pleasure of meeting him or hearing him speak, and those who were brought into more intimate relations with him, through service on committees of which he was a member, came to feel for him a degree of veneration and affection that makes his death a personal grief to them."

In his address delivered at the memorial services held at the Church of the Covenant, Washington, December 13, 1897, the Rev. Teunis S. Hamlin, D. D., paid a long, a loving and a reverent tribute to Mr. Hubbard, saying, in part: ".... Our capital city has lost its first citizen in civil life. The country and the world have lost a benefactor. Science, art, invention, discovery, the legal profession, philanthropy, broadminded and generous culture, intelligent and refined hospitality are distinctly impoverished. Friendship of a pure, unselfish, persistent sort will miss a noble exemplar. Family life of the ideal type will have one less illustration among us.... Distinguished political preferments have been repeatedly offered him; but though the compliment was fully appreciated, the offer was always declined, since he believed independence of action to be best, both for himself and for the causes that he loved, and aimed to promote. During his residence of nearly a quarter of a century at this capital he has been the trusted friend and counselor of presidents and statesmen, and has exercised a strong, if indirect, influence upon national and international affairs. He was a wise and staunch friend of arbitration. He believed that the government should use its post-offices as telegraph stations. He was vitally interested in the free library of this city. He had long urged what is just now happily coming anew to the front the establishment here of a true national university upon the lines drawn by Washington. He was an active and efficient trustee of the Columbian University. He cherished the keenest interest in his alma mater; was president of her alumni association, and provided a lectureship at the college which is filled by his close and cherished friend, ex-senator Dawes. President Tucker says: 'The college honors the memory which has become part of its lasting possessions.' He was a regent of the Smithsonian Institution, and eminently fitted to be, for he was committed mind and heart and soul to the increase and diffusion of knowledge among men.' .... He gave himself with ardor to the forming of the Memorial Association of the District of Columbia, and it is largely through his efforts and influence that the Congress has purchased the house in which Mr. Lincoln died and set it apart as a perpetual shrine of patriotic pilgrimage. He dispensed a generous and refined hospitality not only or chiefly for his own pleasure—though he keenly enjoyed good society—but also because he recognized the duty of a suitable welcome to the city's and the nation's guests. It is many years since any man of distinction for real merits or valuable services has come to Washington without finding himself seated at Mr. Hubbard's table, and among guests whom it was a pleasure and an honor to meet.... Mr. Hubbard's love for this church was intense and unfailing. During the second year of its existence he succeeded Mr. Justice Strong as president of its board of trustees and still held the office at his death. He served upon its building committee and builded his best thought and devotion into its walls.... Mr. Hubbard was a man of marked purity of life, to whom a stain of any sort seemed utterly foreign. No one would have ventured upon coarseness of word or act in his presence. He was intensely conscientious. He was unselfish, willing to accept the efficient result of his labors, and let others get the praise. He could not be roused to resentment, and was often silent when friends thought he should speak and claim his rights. He served his fellowmen not only in the great ways already noted, but with unstinted gifts of thought and sympathy, and if need be, of money, in quiet, unmentioned ministries; and he served them also with what is by no means easiest to give —steadfast friendship. The number is very large of young men, and men not so young, whom Mr. Hubbard drew to him and who regarded him as more than friend—as almost father. This single fact is one of the finest tributes possible to the beauty and strength of his character...."

Mr. Hubbard's valuable collection of etchings and engravings consisting of twenty hundred and ninety prints and seventeen original drawings, together with his collection of art books, were presented to the United States by Mrs. Hubbard in March, 1898. To the accumulation of this collection Mr. Hubbard gave many years, "grudging neither pains nor expense to obtain the finest examples of the masters in the various modern schools." And this "collection has long been regarded by expert judges of art and familiar with its contents, as in many respects the most instructive and valuable in the country." Thus the great "value of this collection is not alone because of its interest, merit and beauty, but for its educational utility as illustrative of the evolution of modern art." This entire collection has been deposited in the library of Congress as a memorial of Mr. Hubbard and "for the benefit of the people of the United States." Mrs. Hubbard also presented a bust of Mr. Hubbard by Gaetano Trentanove

On the corner of Sixteenth and M streets, in Washington, stands the "Gardiner Greene Hubbard Memorial Building," an admirably arranged fire-proof structure designed as the home and the headquarters of the National Geographic Society, and erected by Mrs. Hubbard and her children and grandchildren, and presented to the society, Mrs. Hubbard also adding the gift of a valuable library.

Upon the "most magnificent of the tide-water glaciers" in Alaska, was conferred the name "Hubbard," by his ardent colaborers in geographic research. In the Church of the Covenant, in Washington, is a beautiful memorial window typical of his wholesome, useful life, in which the glory of the setting sun illumines fields of growing green and ripening yellow. Though day is done and the soft shadows of the night are falling, yet the laborer in life's field is still dropping the rich seed into open furrows, while at his feet are many sheaves of golden grain that show how incessantly he garnered that others might enjoy the fruits of his labor.

But a mightier memorial than these, a living, ever-expanding memorial, is found in every city and every town, in hamlets and at cross-roads; a memorial seemingly unlimited in its scope, a revolutionizing influence none can stay; a memorial that has eliminated North and South and East and West, and brought all sections of our country within speaking distance of the White House; a mighty transcontinental telephone system, affording intercommunication to millions of users. In its beneficial influence upon commerce and industry, in making for the peace and the happiness and the prosperity of the country, this system, the foundations of which were laid by Mr. Hubbard in the hope that "all lines might come under one general management and be governed by one broad liberal policy," is typical of the man and what he stood for in life.

LEWIS J. DUDLEY

CHAPTER XV.

DEAF, BUT NO LONGER DUMB.

Lewis Joel Dudley was born on a typical New England farm in—but distant from the centre of—the town of Guilford, Connecticut, on November 11, 1815. Like many another country lad whose childhood days were passed nearly a century ago, he could not be spared from the farm in summer, yet gladly attended the district school in winter. It is written that "the main element in his early environment was religion, and religion of the type then prevalent." Love and gentleness were overshadowed by fear and wrath; all were born in sin and iniquity and only a few would be saved from the awful terrors of eternal punishment. But the kindly, wholesome, and unselfish nature of the lad sought a less cruel religion, and, in later years, found one in which dogma and creed were displaced by loving helpfulness and good works.

At the age of seventeen he entered Guilford Academy, and two years later was admitted to Yale. In 1878, his class (1838) biographer wrote: "His inadequate preparation, especially in mathematics, his ignorance of the laws of health and of the physical conditions requisite for vigorous application, and his fear of disappointing the expectations of friends and former associates, detracted greatly from the pleasure and profit of his college course. He probably spent more time over books and studied with less vigor than almost any of his classmates. His present feeling is that he never learned how to study till after he left college. In the summer of his junior year a protracted sickness came near being fatal. After graduation he taught in the Lewis Academy in Southington, Conn., for one year; in the Brainard Academy in Haddam, Conn., the next year; and, in 1840, became a tutor at Yale. He instructed in Latin the first year, and in Greek the five years following. He introduced some new fea-

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"Leaving the tutorship in 1846, he spent the next year in the Yale Law School, and having previously attended the lectures, received the degree of Bachelor of Laws in 1847. He passed the following year in the law office of Messrs. Hungerford & Cone, at Hartford, and was admitted to the bar in 1848. Disliking the law 'pleadings' as then conducted, and feeling uncertain of success as a lawyer, but quite assured of success as a teacher, he opened, in 1849, at the suggestion of a high official at Yale, a classical school at Northampton Mass., to prepare pupils for college. This school was a success, and continued to flourish fourteen years, having pupils from almost every state in the Union. It was suspended in 1862, for reasons growing out of the Civil War. Then he devoted his energies to the enlistment of Northampton's quota of soldiers and to their comfort in the field; was sent to the Massachusetts Senate in 1864, and made a member of the State Valuation Committee of the same year; was a member of the Massachusetts House of Representatives in 1865-6-7, and in 1873."

In 1883, Mr. Dudley was elected to the presidency of Clarke School and held that office until his death. For many years he had suffered from bronchial trouble, and, following a severe attack of asthma, he passed away at 6.30 A. M., Thursday, February 27, 1896, leaving his daughter Theresa, and his widow, Theresa Hunt Bates, to whom he was married on May 7, 1851, to mourn his loss. Mrs. Dudley was a daughter of the late Isaac C. Bates, United States Senator from Massachusetts. She died on March 9, 1901.

An intimate friend who thoroughly appreciated and valued Mr. Dudley's intellectual attainments, has described him "as a man of the old school, liberal in many ways but still he clung to the teachings and example of his Puritan ancestors. The dominant principle of his life was thoroughness. Never anything was half-way accomplished by him." And Mr. Hubbard said: "From 1883 until his death he was more conservative than I was, and we often differed as to the best policy to be pursued; when his reason was convinced, he was always ready to yield,—one of the hardest tasks for a man of his character; but these differences never affected our confidence in each other, nor our trust and love."

Referring to the organization of Clarke School, Mr. Hubbard said, "The charter was obtained, a meeting of the Corporators was called, and the question was asked, 'What system should be adopted?' It was Mr. Dudley, I think, who proposed that Miss Rogers should be invited with her little school, to form the nucleus of the Clarke Institution. She came—a school was opened in the Gothic Seminary where Mr. Dudley had taught and lived so many years. I doubt if ever a day passed while the school was in his house, that Mr. Dudley did not visit the school and give to Miss Rogers and the other teachers the help of his wise counsel and sympathy. When the school was removed from his home to Round Hill, he continued his watchful care.

"He was chairman of our school committee from its organization until his death, and a more devoted friend and officer could not have been found, until failing years, loss of hearing and of sight, with declining health forbade his frequent attendance at the school. Even then his advice was given whenever desired, and Miss Yale, during the many years of her connection with the school, has received from him the same encouragement and help that was given to Miss Rogers."

It is interesting to add that from the day he made his memorable impassioned plea before the legislature for the passage of an act incorporating the Clarke Institution, until his death in 1896, Mr. Dudley did all in his power to advance its best interests and to aid Miss Rogers in every way, while during the last fourteen years of his life, 1883-1896, he acceptably served as its president. He forcibly urged the State to cease discriminating against the parents of the deaf and the blind, in the matter of education, after professing a policy of free schooling to all children, especially urging that deaf children should be educated in the school preferred by the parents, with "no distinction on account of the wealth or poverty of the parents or guardians of such children." He strove to have the word "dumb" stricken from all official documents and literature that applied to intelligent beings capable of being taught speech, contending that "the sooner all phraseology which has so long served to broaden, deepen and intensify demarcation between hearing and deaf pupils, is discarded, the better it will be for the latter class." And he showed how the best lexicography had declared that the word "dumb" is properly applied only to creatures which do not possess the organs of articulate speech. To apply to the deaf child an epithet which expresses the most universal characteristic of the brute creation, is to keep alive in the public mind debasing and disparaging associations." And through his efforts "her deaf children now figure in official phraseology simply as Massachusetts pupils."

At the fourth conference of principals and superintendents, held in May, 1880, Mr. Dudley explained how the word *dumb* "is fraught with painful associations to every sensitive mind, is disparaging to the deaf, and humiliating to them and their kindred. In all cases where the word 'deaf' will not suffice, let us use the expression, 'deaf-mute,' which is more accurate, more philosophical and more humane. When we would distinguish brutes from ourselves, and especially when we would emphasize the distinguishing mark of their inferiority, we call them dumb brutes.' When the apostle, Peter, would emphasize the infatuation of Balaam, it was not enough for him to say, 'an ass forbade the madness of the prophet,' but he must needs say it was a 'dumb ass.' When the prophet, Isaiah, would fitly characterize the greedy and faithless religious teachers of his day, it was not enough for him to call them 'dogs,' but he must call them 'dumb dogs.' When Mr. Longfellow would exhort us to aim at something higher than mere animal existence, it does not suffice for him to speak of 'cattle,' and 'driven cattle,' but it is 'dumb, driven cattle that we should not be like.' "

Referring to the earliest records of the treatment of the deaf, Mr. Dudley said: ". . . . So it happened that to the Greeks and Romans, and to our Saxon ancestors, ignorant of physiology, the absence of speech indicated the absence of reason. As the deaf-born were always speechless, they were always supposed lacking intellect, mentally imbecile, half idiotic; and that is just what the old Saxon word, *dumb*, originally meant, and just why it was applied to the deaf. More than this: As the speechlessness *alias* mental imbecility, was not known to be caused by the deafness, but was supposed a separate and additional infirmity, the deaf-born were supposed subject to a double curse. Hence we have the copulative, *and*, as well as the epithet *dumb*—deaf *and* dumb; deaf *and* stupid, deaf *and* brutish! The times of that ignorance we must needs wink at, but now that we know better, why perpetuate this barbarism? Why not discard and discountenance this old-fashioned, mistaken, cruel phraseology?"

Again, in his annual report for the year ending August 31, 1884, President Dudley, in referring to the "coarse and cruel designation" of *dumb*, wrote: "It may be said that this word in its human application, is too strongly intrenched in our vernacular to be displaced. But this is not self-evident. Language is not a stereotyped thing. A multitude of words which were current in Shakespeare's time, have become obsolete or been radically changed in their significance and application. A revision of our English version of the Scriptures was called for largely by this fact. Simply ceasing to use a word in a given application will render it obsolete in that application. It is the prerogative of every profession and guild to dictate the terminology of its own subject matter. There is need only of a beginning in the right quarter. Let the word *dumb* be stricken from the title-page of the only periodical of character in this country devoted to the interests of the deaf, and let it be expunged from the corporate name of every deaf-mute institution in the land, and the work will be already half done. This change of name can be accomplished by means no more expensive or onerous than a simple legislative resolve of two or three lines; possibly, in some cases, without even this formality. Then let all instructors and special friends of these unfortunates, blot the word in its human application from their vocabulary, use instead 'deaf-mute' or 'deaf,' and the change will soon find its own way into periodicals, newspapers and popular speech.

"This is a matter quite independent and outside of all agreements as to the best system of instruction. Those who teach the deaf to speak, demonstrate the impropriety of the current terminology, and almost unconsciously cease to use it. Those who still think the manual method best for a majority of the deaf, *cannot afford* to perpetuate this terminology. To do so, will certainly operate to their disadvantage. The public mind is becoming thoughtful, inquisitive, sensitive with respect to everything pertaining to humanity, and is likely, at no distant day, to regard with disfavor any system of instruction with which the *use* of the obnoxious epithet 'dumb' applied to human beings, shall become exclusively identified.

"It is earnestly to be hoped that *all* teachers of the deaf, of whatever persuasion as to systems, will cordially co-operate in effecting a change *to which not the slightest valid objection is apparent*, and that none will longer, unconsciously and needlessly counteract in any degree by their language, the high and benevolent intent of their labors—the elevation and well-being of an unfortunate class."

Thus it is gratifying to know that Mr. Dudley's last days on earth were enriched by the message that his earnest efforts, covering a period of three years, to have the name of the Clarke Institution for Deaf-Mutes changed to the Clarke School for the Deaf, had resulted in the passage of an act by the Legislature, on February 12, 1896. It should also be a source of gratification to all friends of deaf children, that of one hundred and thirty-seven schools or institutions for the deaf in the United States, only nineteen now have the word "dumb" incorporated in the official title.

Yet, notwithstanding this remarkable progress, it is a source of regret that the legislatures of the great commonwealths of Illinois, Indiana, Ohio, Pennsylvania and New York, to say nothing of other States, have failed "to blot the word 'dumb' in its human application" from the official designation of institutions designed for the education of children whose vocal organs are unimpaired.

FRANK B. SANBORN

CHAPTER XVI.

ONE OF THE CONCORD GROUP.

Franklin Benjamin Sanborn, who, in 1877, succeeded Mr. Hubbard as president of Clarke School, was born on a farm at Hampton Falls, New Hampshire, on December 15, 1831. He attended Phillips Exeter Academy; entered Harvard in 1852, graduating in 1855. In March of that year he moved to Concord, Massachusetts, and since that date has maintained a residence in that historic town, though in the intervening years he has visited many countries.

All his life Mr. Sanborn has been a teacher; a practical agitator who maketh good. For eight years he was the headmaster of a flourishing school which he founded in Concord. It is of record that he "was the most genial and goodhumored of schoolmasters." But since 1856, Mr. Sanborn has been a teacher of the Republic : his pupils, the thoughtful men and women of the Nation, who earnestly desired to help the oppressed and the defective. The practical, helpful character of Mr. Sanborn's pioneer philanthropic work has won for him a well-merited reputation.

On his arrival in Concord, through the kindness of Emerson, Mr. Sanborn secured three rooms for himself and sister, in the home of Ellery Channing, while they dined at the home of Thoreau's mother, just across the street. Thus it came about that Emerson, Thoreau, Channing, Bronson Alcott, and Sanborn grew to know each other intimately. And, it may be added, that during the last ten years of his life Ellery Channing resided in the home of Mr. Sanborn, in Concord, and died there in December, 1901.

In 1885, Concord had a population of less than twenty-five hundred, and only one wealthy resident. Yet Mr. Sanborn gave

$100 and the town raised $900 more at the first meeting held to help the brave men and women who were striving to keep Kansas a free State. Then Mr. Sanborn visited Illinois, Iowa, and Nebraska, in aid of the Free State movement. On February 18, 1857, he introduced John Brown to the Massachusetts Legislature, as the sixth descendant of Peter Browne, of the Mayflower, stated that Captain Brown had been to Kansas what Miles Standish was to the Plymouth Colony, and added: "This man whom all Massachusetts rises up to honor, is today an outlaw in Kansas." Mr. Sanborn took John Brown to Concord, and introduced him to Thoreau, and Emerson came in and invited the Kansas hero to remain with him overnight, and they spent much of the night talking about conditions in Kansas. In 1859, John Brown again visited the home of Sanborn, who, in 1858, had unsuccessfully endeavored to dissuade him from making the Virginia foray. But all this is better told in the writings of others. Suffice it to say that Sanborn's brave sister, Sarah, gave watchful care to John Brown's daughters while they attended her brother's school.

In September, 1863, Mr. Sanborn was appointed secretary and became a member of the executive committee of the Board of State Charities of Massachusetts, the first State board of charities organized in America. Ten years later he aided in the organization of the National Conference of Charities and Correction, in which he has since been a prominent leader. Mr. Sanborn was also one of the original incorporators of the National Prison Association, in 1871.

In 1865, Mr. Sanborn was associated with Dr. Samuel Gridley Howe and others, in the organization of the American Social Science Association, and acceptably served as its secretary for thirty-two years. In 1879, with Bronson Alcott and W. T. Harris, he opened the Concord School of Philosophy.

During the years 1863-1868, Mr. Sanborn edited the weekly *Boston Commonwealth*, a strenuous advocate of emancipation. In 1868, he became an editor of the *Springfield Republican*, and helped to make it one of the most influential daily papers in the country.

Mr. Sanborn was a strong and efficient colaborer in the Gardiner Greene Hubbard movement of 1864-1867, in behalf of deaf children. With Dr. Howe, he perceived the fallacy of classing as a charitable act, the education of *any* of the children of the Commonwealth. Dr. Samuel G. Howe was chairman, and Mr. Sanborn, secretary of the Board of State Charities, and in their annual report for 1865, they sketched "the outlines of a plan by which the deaf-mute children of Massachusetts, who, if taught at all, are now sent to an adjoining State, can be kept at home, and instructed by methods equally good, and, perhaps, superior."

The gentlemen again called attention to this important subject in the annual report for 1866, and stated that there were "three considerations which should have great weight in deciding this question:

"First, these unfortunates are, for the time, wards of the Commonwealth; and, other things being equal, she should commit them to the charge of her own citizens rather than to others; she should keep them at home rather than send them abroad. In the words of the Governor, 'As ours is the responsibility, be ours, also, the grateful labor. To no other object of philanthropy will the warm heart of Massachusetts respond more promptly.' It is well known to those conversant with the subject, that great and important changes in the mode of instructing mutes have been earnestly advocated by some of the ablest teachers in Europe, and that the Governments of France and of Russia have taken measures to test the value of these by actual practice. Massachusetts may become ever so well convinced that these changes are desirable, but she has no power at present to try them in practice, for she has no right to prescribe the method of instruction at the Asylum in Hartford.

"Second, any undue aggregation of persons suffering a common infirmity is unwise, because while it intensifies the unfavorable peculiarities growing out of their infirmity, it lessens the corrective influence of associating with ordinary persons. Schools, therefore, for the infirm or defective, especially boarding schools, should be no larger than is necessary. This principle can hardly be insisted upon too strongly. Massachusetts now sends a hundred mute children to the Hartford Asylum, and if the school were nearer the centre of our population, the number would probably reach a hundred and fifty, which is even more than is necessary for all purposes of classification. This subject was fully discussed in our last year's Report, and it is hardly necessary for us to say here, that we do not desire to build up a large and costly institution for the deaf-mutes of Massachusetts, but to see them distributed in several schools, to which pupils younger than are now received at Hartford could be sent.

"Third, the chief end of the special instruction of mutes is to teach language, from learning which, in the ordinary way, they are precluded by their infirmity. Now, like other children, they are best adapted for this during the tender years of early childhood. Every year after a certain age, which is quickly reached, the facility for learning language lessens. But the reluctance of parents to send mutes from home during childhood is very great, and their reluctance naturally increases in proportion to the distance of the school.

"If, as has been suggested, there were several small schools for such children in different parts of the State, and one central finishing school, in which the higher branches of learning and the trades could be taught, it might meet the wants of this interesting class in the best manner, with least interruption of those family and social relations which are even more important for them than for ordinary children."

During the meetings held by the joint legislative committee, in 1867, as already explained in earlier chapters, Mr. Sanborn told of a pleasant visit he had had with Mabel Hubbard, at her father's residence, how he had "asked questions in geography, and heard her recite poetry, and she also asked questions; and I believe we answered the questions to our mutual satisfaction." He told of his visit to Miss Rogers' school at Chelmsford, of the progress the pupils were making, especially two who were born deaf, and compared their progress with pupils in Hartford. He gave an historical resumé of early efforts to educate the deaf, of Pereire's school in Paris, in 1750, of Braidwood's school, of the efforts of Francis Green, of Dr. Blanchet's school, and of the early age at which the education of deaf children should commence. Then he advocated day-schools for the deaf, presented statistics showing the probable "number of deaf-mute children living in cities and thickly-settled localities, who might attend such schools in case they were established," and added: "I do not think we have information enough to enable us to say that the experiment would certainly succeed; but I think the State should put herself in a position to try that experiment, which I am convinced, is the very pivot of the whole matter of instructing deaf-mutes."

Speaking of the oral method, Mr. Sanborn said: "Without entering into the question whether that method is correct, or to how many children it is applicable, I maintain that children who have lost their hearing, but who retain the faculty of speech, should at once, without the loss of a day, if possible, have that faculty cultivated and improved; and I am prepared, if necessary, to show that that mode of teaching by which the faculty of speech is retained and improved, is very much neglected at Hartford and in almost every institution for the instruction of deaf-mutes in this country."

Mr. Sanborn's testimony before the Legislative committee covers a total of more than twenty-six pages, yet to his lasting honor be it recorded, that only once did he use the word "dumb," when referring to the deaf, save in quoting from the writings or statements of others. "The deaf" or "deaf-mutes" were his invariable expressions.

Early in 1868, Mr. Sanborn became a corporator of Clarke School, being elected to the vacancy created by the retirement of a member of the board, an office he still holds. In 1877, Mr. Sanborn was elected to the presidency to succeed Mr. Hubbard, and efficiently discharged the duties of that office for five years. Mr. Sanborn's clear conception of the value of speech to the deaf child, is forcibly shown in his annual reports, as president of Clarke School, to the State Board of Education. In 1878, he wrote:

"The (deaf) pupils who acquire a knowledge of the higher branches must be comparatively few, (as they are in our public schools), while, from the difficulties which deafness creates, the time spent in learning the elementary branches is generally prolonged. If, in addition to these, the deaf pupil shows some dullness or eccentricity of mind, as not unfrequently happens, his progress in learning is still more delayed, and a point may be reached beyond which he cannot easily go. Add to this, again, the fact that the same disease or defective condition of health, which first caused the deafness, may continue to affect the vigor of the child, and it will readily be seen that the teacher of deaf children has to contend against many obstacles which hardly show themselves in the instruction of those who can hear. To overcome these, the Corporation has endeavored to secure teachers who have a special fitness for our method of instruction, and in this we have been so far successful that the results at the Clarke Institution have been useful and encouraging in a high degree. Were this simply our own opinion we might hesitate to express it with entire confidence; but it is confirmed, as we understand, by the judgment of the Board of Education, which supervises all the schools of Massachusetts, and by that of other impartial persons from many states and countries, who have visited and inspected our schools. A difference of opinion still exists as to the extent to which the teaching of articulation and by articulation ought to be carried in particular cases; but all who understand our methods and results are agreed, that much useful instruction is given here where the only teaching is by articulation, and where but one-third of the whole number received have been either semi-deaf or semi-mute. Practically a majority of them are congenital mutes, who here acquire and retain articulation and are made independent of the sign language in their whole education. In order to do this it is important that the instruction of our pupils should begin early and should be carried on as methodically, and with as many advantages as possible.'

In 1879, his report contains this statement:

"How valuable this instruction has been to those pupils who have left the Clarke School, either by graduation or before completing their course, will appear in part, from the letters quoted and the statements made in the report of Miss Rogers concerning the experience of pupils after leaving school. It will be seen, for example, that not only those who were regarded here as proficient pupils, but several others, have made their way in the world by virtue of what they learned at the Clarke Institution. It is often thought and sometimes said that our mode of instruction is a costly luxury—well enough for the rich and the intelligent, but not so well adapted to the poor or dull children. We find, on the contrary, that, just as it is the poor who need it most, so they profit most by it. Being restored to society in some degree by the power of speech and lip-reading acquired here, pupils of this class are more ready to support themselves by diligent labor than those who can only use the sign language; while to those who have gone on well in their studies, a wider range of occupation is opened than the deaf-mute taught by signs can enter upon. This, at all events, is our belief, and the facts stated by the Principal seem to confirm it."

In his interesting address on "The Instruction of the Deaf in America," delivered at the twenty-fifth anniversary of the opening of the Clarke School, October 12, 1892, Mr. Sanborn cited many facts of historical value in connection with the movement that culminated in the successful introduction of oral teaching here in America.

In his characteristic address, welcoming to Clarke School the members of the American Association to Promote the Teaching of Speech to the Deaf, in June, 1899, Mr. Sanborn said: "We welcome here, as we have always welcomed, those who take a different view of our branch of education from that which experience has taught us to follow. The accomplished and energetic instructors in the American schools that preceded ours were subjects of my admiration when I first began to inspect their schools, thirty-five years ago, and I never have lost that feeling of respect which such talent and zeal, even if misdirected in details, must ever inspire in the friends of mankind. They have learned to value, more highly than they then did, the methods which they had hardly known, or but doubtingly tried; and we have learned to recognize the difficulties which they fearlessly pointed out to us in our chosen path. We shall continue to differ, I suppose,—nor do I regret it,—in some of the details of instruction; but we can agree to differ, so long as we all keep in view the great purpose of all instruction."

CHAPTER XVII.

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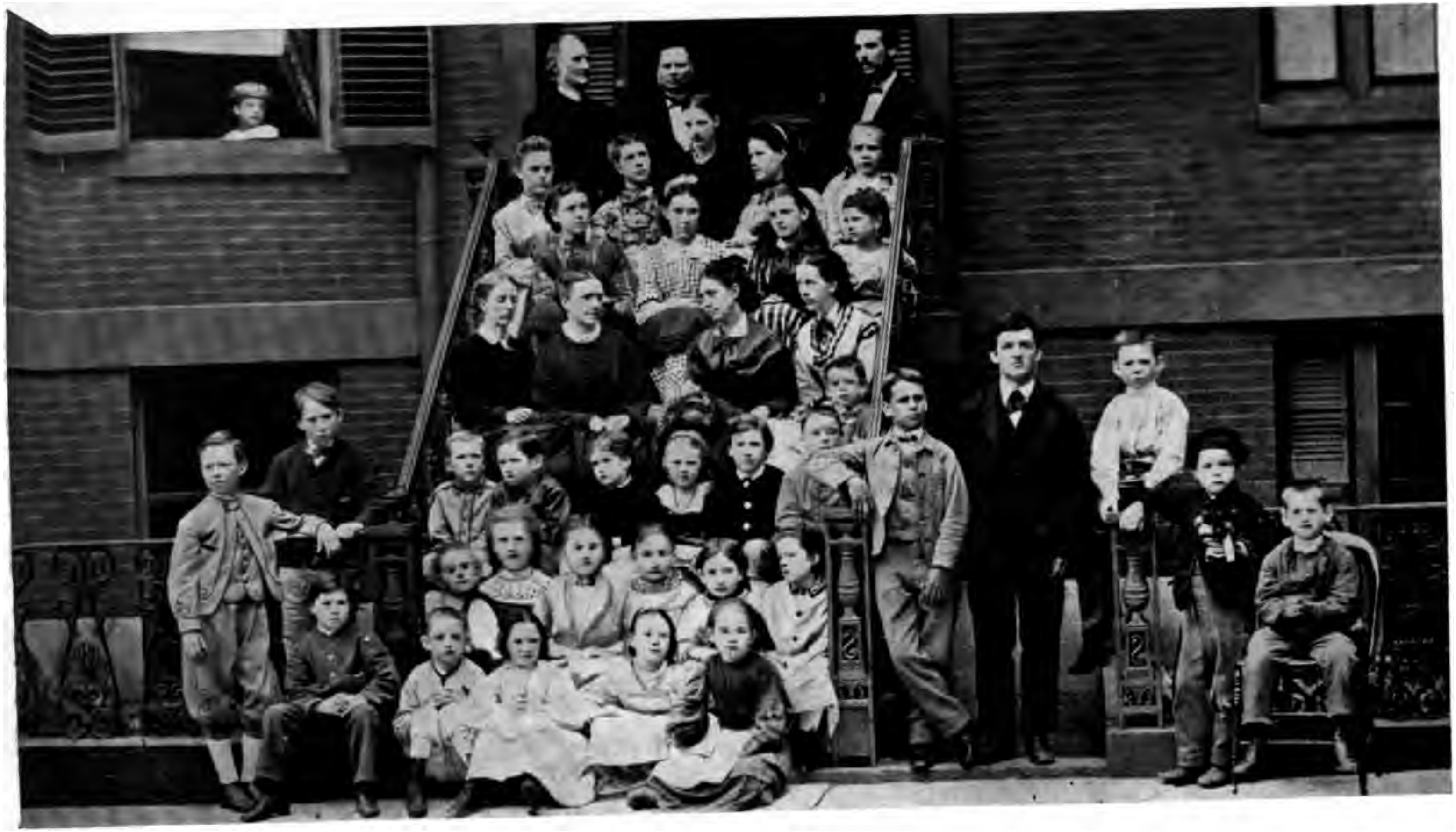
A year after the school had received its new name, an effort was made to have the words "for the deaf" dropped from the title, and let it read simply the "Horace Mann School." But after several discussions the school board decided that "the present name is satisfactory to those most interested in the school itself, and that the words 'for the deaf' are of an advantage to an understanding of the special object of its teaching," and no change was made.

The quarters the school occupied in Pemberton square becoming too small for the rapidly growing classes, an additional room was provided on March 12, 1872. The following year the necessity of more suitable quarters by reason of continuous growth and ever-expanding influence, became so apparent that a movement was started that brought about the removal of the school to the more conveniently arranged building on Warrenton street, in September, 1875. In five years the school had outgrown this building, but here it was destined to stay for the long period of fifteen years, though in July, 1879, an effort was made to remodel the building to meet the needs of the increasing number of pupils.

On November 11, 1879, the school board recorded that "the number of scholars in the Horace Mann School had increased steadily from year to year, and already the present accommodations are insufficient, although ample when the building now occupied was fitted for the use of this school in 1875. The natural and evident desire of the parents of deaf children to keep them under parental care and in the companionship of their hearing brothers and sisters, provided they can obtain for them the special instruction they need, is sufficient ground for predicating a continued increase in the school; and the committee are therefore of the opinion that it would be advisable to consider, without delay, plans for such increase of accommodations as may provide for the growth of the school for some years to come, though they doubt whether it will be practicable to secure such provision in the present location."



PEMBERTON-STREET SCHOOL

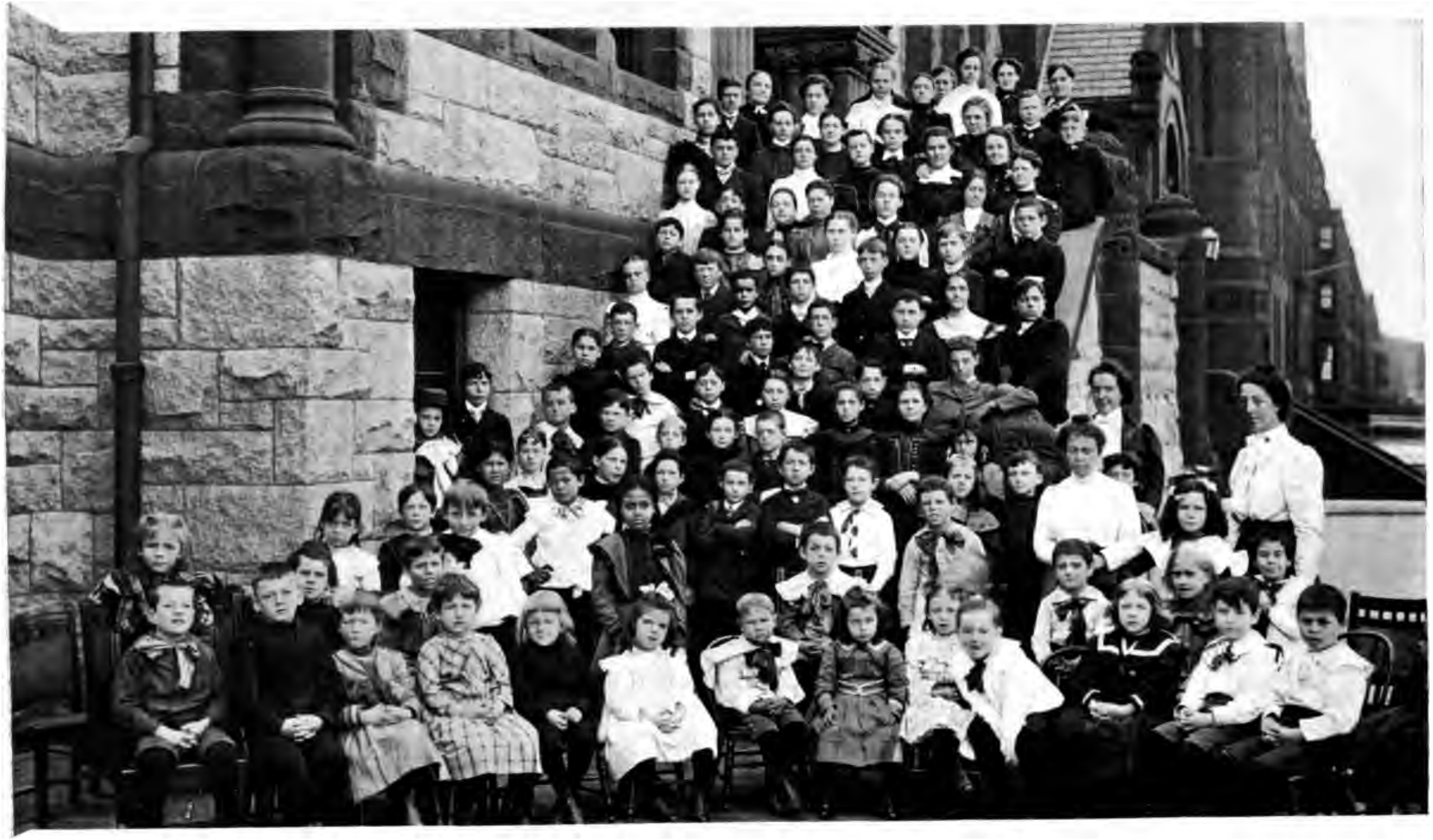
On November 25, it was decided best not to attempt to remodel the old building, and there the matter rested until April 12, 1881, when another effort was made to secure more suitable rooms. After much discussion it was decided, on December 13, 1881, that it was "inexpedient to take action at the present time." The next move to "provide more suitable accommodations" is recorded on February 26, 1884, and a year later the school board "ordered that a building be erected on a site to be given by the State." The necessary land on Newbury street was presented by the Commonwealth on April 29, 1885. On January 26, 1886, the school board requested the city council "to erect a school building, and to appropriate $40,000 for that purpose," and the following October $15,000 more was asked for.

While the construction of the new school building was under way, further delay was caused through failure on the part of the contractors. So on October 25, 1888, the school board granted the use of two unoccupied rooms in the Appleton street primary school-house to the Horace Mann School. Meanwhile the new building having been completed, the school board took possession in April, 1890, and the classes moved in in June, 1890. This handsome structure, on the construction and furnishing of which the municipality expended more than $90,000, is located at 178 Newbury street, within two blocks of all the principal car lines, and in one of the most accessible portions of Boston. Dr. Edward Everett Hale's church is next door to the school, a block away is the Boston Athletic Club, and the Harvard Medical School, the Boston Art Club, the new Old South Church, and the Massachusetts Normal Art School, while the Public Library, the Museum of Fine Arts, and Copley Square are but two blocks away. The beautiful and park-like Commonwealth avenue is only a block distant from and parallels Newbury street.

On the twenty-first anniversary of the opening of the Horace Mann School, the formal dedicatory exercises of this new building occurred on November 10, 1890, and were participated in by eminent men and women who were striving to advance the welfare of the deaf, including Dr. Edward Everett Hale, Mr. George C. Mann, a son of Horace Mann, Hon. Henry S. Washburne, Miss Sarah Fuller, Hon. John W. Dickinson, Dr. Caroine E. Hastings, Dr. Samuel Eliot, Hon. Charles I. Gallagher and others. Mayor Hart stated that "the Commonwealth, of which Boston is truly the capital, demands that *every child* in Massachusetts shall have the full benefit of a common-school education. When the law makes this demand, the blind and the deaf are included.... For twenty-one years today, the city has maintained for the deaf a free public day-school, which now finds a home in the splendid building dedicated today. For this magnificent estate we are under obligations to the city and the Commonwealth, the latter contributing the land and a part of the running expenses, while the city of Boston supplies the building, costing with the furniture, more than $90,000, and maintains the school.

"Great praise is due also to the teachers of this school, especially the faithful principal, who has served from its very beginning. In addition, it behooves us all to remember with gratitude the services rendered to the education of the deaf by the distinguished inventor of the telephone bearing his name, Dr. Alexander Graham Bell. His great career in this country is due to the fact that Boston invited him to come here and teach the more effectual transmission of human speech. He has taught the deaf to understand the words of wisdom and love, and he has enabled us all to understand when we are spoken to over great distances...."

The Hon. Gardiner Greene Hubbard delivered an interesting historical address, "recalling the memory of him through whose instrumentality it was founded." Mr. Hubbard said: ". . . . To Miss Fuller, this school and the deaf children of America owe a debt of gratitude that can never be repaid.... This school is appropriately named the Horace Mann School, since Mr. Mann was the first to recommend the adoption of the oral system; but it was to Mr. King that this school owes its existence. The names of those who laid the foundation and built the edifice should not be forgotten. A bronze tablet should be affixed to its walls; and thereon, associated with the name of Horace Mann, should be inscribed the names of Dexter S. King and Sarah Fuller, that thus the names of the three who have done



HORACE MANN SCHOOL

so much for the education of the deaf may be perpetuated. . . . As the direct offspring of this the first day-school, similar schools have grown up in other States, and its influence is felt through the length and breadth of our land.... But this school represents not merely the opening of the first day-school, but with the Clarke Institution, the introduction and development of a system of education for the deaf until then unknown in this country. . . ." Then Mr. Hubbard told how a few years after the Horace Mann School was started, "an English gentleman, Mr. B. St. John Ackers, visited the various schools of England and America, seeking for the best means of educating his own deaf child. He decided that she should be taught by articulation, rather than by signs, which was the system then used in the English institution. He was so much pleased with this school that he engaged one of its teachers, Miss Barton, to return with him. More and more convinced of the superiority of articulation teaching, and feeling the importance of thorough and earnest teachers, he was led to establish a normal school, which has sent out many teachers well-fitted for their work. Subsequently, Mr. Ackers, then a member of Parliament, was influential in securing the appointment of a 'Royal Commission' to investigate and report upon the condition of the blind, the deaf, and the dumb of the United Kingdom, and was appointed one of the commission by the Queen. Dr. Gallaudet and Dr. Alexander Graham Bell were invited to be present, as representing the two systems in use in this country. Dr. Bell gave a full account of the Horace Mann School and its work, in which he has always felt the deepest interest. In their report the Commission recommend: 'That every child that is deaf should have full opportunity of education in the oral system; that all children should be for the first year, at least, instructed in the oral system, and after the first year they should be taught to speak and lip-read on the oral system, unless they were physically deficient. That children who have partial hearing should in all cases be instructed in the pure oral system. That trained teachers of the deaf should, as in Germany, receive salaries such as would induce teachers of special attainments to enter the profession, and on a higher scale than those enjoyed by trained teachers of ordinary children.'

"When we consider," added Mr. Hubbard, "that the interest in deaf-mute education which formed the Royal Commission, and that the recommendations which have so changed the system of education in Great Britain, are a direct growth from our work, have we not reason to believe that the seed sown in our weakness has already borne much fruit and will yield a still more abundant harvest? ...."

Mr. Edwin P. Seaver, superintendent of public schools, said, ".... Time was when persons born deaf were classed with the idiotic, as being incapacitated for instruction or for communication with their fellowmen. They were regarded by the law as *non compos mentis*, and placed under guardianship, when necessary, as idiots were. Down to quite recent times the common assumption was that the congenitally deaf could never learn to speak. Deprived of hearing, they were also of necessity deprived of speech. Evidence of this is found in the usual appellations 'deaf-mute,' or 'deaf and dumb,' which have their equivalents in all languages...." Then he outlined the many "reasons for undertaking to put deaf persons in the fullest possible communication with hearing and speaking people," and added, "but there is another and more weighty reason still. It has been pointed out by an eminent authority, Dr. Alexander Graham Bell, that if non-speaking deaf people are kept apart from others, so that they associate chiefly among themselves, cultivating their sign-language to a higher and higher pitch of perfection, and becoming more interested in each other than in people outside their own little circle, there is a real danger lest, through the force of heredity, a dumb variety of the human race may ultimately become established. There are some remarkable statistics which support this view. Social arrangements which favor intermarriages among non-speaking deaf people are clearly undesirable, and ought by all means to be discouraged. The direct way to do this is to encourage and facilitate to the utmost social intercourse with people not so afflicted."

Not only does the Horace Mann School receive as pupils children who were born deaf or became deaf through illness or otherwise, but it strives to aid any hearing pupils in the other public schools in Boston who may be handicapped with defective speech. In this excellent work the school enlisted, in 1903, the enthusiastic and sympathetic services of Dr. William N. Bullard, neurologist at the children's hospital. To avoid any interruption in the children's daily lessons, this special instruction is given on Saturdays. "Three distinct groups were formed for class instruction, according to the various needs—pupils needing correction of stammering; pupils needing correction of stammering and of defective speech; pupils needing correction of defective speech. In addition there were two pupils who required individual teaching because of lack of mental and physical development. In every case the results of the few months' work were such as to warrant a continuance of the instruction during the coming year, and the giving of a more extended notice of it in order to reach others."

It will be recalled that the Horace Mann School opened with nine pupils on November 10, 1869. Thirty-six years later the number of pupils enrolled at the close of the school year, in June, 1905, was one hundred and forty-six, about evenly divided between boys and girls. During these years, covering more than the allotted life-period of a generation of mankind, several hundred pupils have joined its classes, many of whom are now actively engaged in commercial, industrial and professional occupations, and are in no wise dependent on relatives or society for sustenance. School Document No. 19, for 1893, contains this paragraph: "The inquiry, What can these boys and girls do? can best be answered by mentioning some of the occupations in which pupils from this school are now engaged, and in which they find pleasure as well as profit. They are those of the cabinet-maker, carpenter, lather, mason, painter, brass-worker, harness-maker, tanner, stableman, fisherman, farmer, lumberman, diamond-cutter, engraver, tool-maker, compositor and printer, milliner, dressmaker, artist, writer, and occupations of the various factories—watch, shoe, parasol, tack, and rubber."

The annual report for 1905 stated "that the steadily increasing number of pupils requiring the special instruction afforded by this school is the reason for urging immediate action, as we of this committee feel that we must, in providing a larger building and more ample space for yard room. When the school was moved into its present building, in 1890, it numbered eighty pupils, and, in the opinion of persons who had watched its growth for twenty years, accommodations for one hundred pupils would be sufficient for the future. The ten rooms then provided have long since been outgrown, and the attic floor has been utilized for class-rooms, and every available portion of the house has been called into requisition to meet unexpected demands."

In 1880, Miss Fuller began a systematic effort to encourage the teaching of the deaf child in the home, just in the same manner as the hearing child is taught, to the end that when the deaf child arrived at the school age it would possess a slight vocabulary and some comprehension of the English language.

"Through the influence of the Horace Mann School, the first infant school for the deaf, in America," was established on June 15, 1888, by Mrs. Louisa Brooks, in West Medford, Massachusetts. Mrs. Brooks was "the mother of a deaf child," and named the school "The Sarah Fuller Home for Little Children Who Cannot Hear." In this home infants of two years of age, or older, are admitted, taught speech and speech-reading and prepared to enter the Horace Mann School in the belief that "early teaching brings to the child who cannot hear by a slower process, what hearing children slowly absorb and lead it in various ways to a comprehension of the world about it and to habits of self-command. It is hard for any one to realize that speech and language do not come of themselves but are the result of hearing. The little child deprived of hearing must be taught the particular word which corresponds to every object and action also the relation of every word to every other word, as well as to understand and use familiar speech. And all this must come through the medium of sight." It is pleasant to learn that the "theory and practice of this home is that the children are in no sense in need of pity—that if they are regarded as happy, progressive and self-reliant, they will become so;this they are to an unusual degree," notwithstanding, that they are burdened with the misfortune of deafness. Similar homes have since been opened in other cities, notably the Home for Teaching Speech to Little Deaf Children in Philadelphia, founded by Emma and Mary S. Garrett, where deaf children are also admitted at two years of age.

During the discussion of Dr. Bell's valuable paper on "The Condition of Articulation Teaching in America," presented at the Seventh National Conference of Superintendents and Principals of Institutions for the Deaf, held at Colorado Springs, in August, 1892, it was held by some of the speakers that when a State provides for the instruction of children, if the State determines that the best interests of the children demand that they be taught manually, the parents have nothing to do with it, and that this pandering to the desires of the parents, who in many cases are not competent to judge, is harmful to the schools.

Among those who dissented from such extreme views, was Miss Fuller, who said: "I fear that the parents will be misunderstood if I do not say a word in their behalf. The school of which I have charge was brought into existence by the wish of parents, that their children might be educated under their own care and supervision. In Massachusetts we are antiquated enough to believe that the parents constitute, at least, a part of what we call our State of Massachusetts; and we believe too that the parents have the same right to superintend and advise and suggest whatever they think is best for their deaf children as they do for their hearing children. When, more than twenty years ago, I was privileged to come among you as a teacher, I came as a public school teacher from the common schools, and have continued to be a public school teacher, although instructing deaf children; and the one impressive thought that came to me as I sat among you and listened to the remarks and discussions was, these teachers seem to have the entire control of the education of the deaf children. Who is sufficient for these things? That impression has come back to me with great force today. Is it right for us to ignore the rights of the parents? If we were parents, would we be willing to put into the hands of strangers the most sacred trust that can be given to man? It seems to me that there was a misunderstanding this morning in regard to the condition of the children who come to us for education. If I may speak of my own work, I will say that there are children who come to me having speech and some hearing; others who have no hearing but some speech; another group having neither hearing nor speech, having lost it at a very early age or having been born without the sense of hearing. The first and second groups are educated very much as the children in the public schools. Our school is under the Public School Board of Boston."

At the World's Congress of Instructors of the Deaf, held at Chicago, in July, 1893, Miss Fuller read a ten-minute paper entitled Day School for the Deaf, the primary object of which was "to induce parents of deaf children, through a consideration of some of the advantages which home and family-life afford, to make their homes in the vicinity of schools for the deaf, and allow their children to attend them as day pupils." Miss Fuller held that ".... It would almost seem as if such an arrangement would be the first wish and purpose of every parent on finding that his child is deaf, and on that account needing to have life rich in opportunities for seeing and experiencing all that can be made helpful to his mental growth. Consider for a moment what *home* means to all children, and then reflect upon what it may be made to a deaf child. . . . The stirring, active life of the home appeals in a variety of ways to the untried powers of a child, and rouses within him a desire to know and to do as those about him are doing. Through repeated experiments and their resulting successes or failures the child learns to know himself, and to use, within narrow limits, all the powers he possesses. Experience, so essential to the right understanding of what can be fully known, is a necessity to the deaf child's true comprehension of much that he needs to know, and the home—the world in miniature—is the place where this experience should be obtained. Sharing in homely duties, however trifling, gives almost unnumbered opportunites for laying the foundation for all true character-building. Mutual services and mutual concessions teach the deaf child as well as the hearing of the interdependence of social relations, and prepare him for the responsibilities and duties of life. The natural relations into which a child is born are the best means by which love, truth, unselfishness, and obedience are fostered, and from which he should pass into the larger social and business world. All of this home education and much more is begun, whether the parents are conscious of the fact or not, before the child is placed under the special training provided by schools. How best shall that school training become one of the agencies in the harmonious, natural development of the child's mental, moral, and physical nature? I would answer, by making it supplemental to this home education. Keeping undisturbed the home environment, the school should minister to the needs of its members individually as well as collectively."

In April, 1894, Miss Fuller organized the Boston Parents' Educational Association for Deaf Children. Its active membership includes only the parents of deaf children, and its objective mission is, "to encourage home instruction at the earliest possible age; aid schools for the deaf in the city of Boston; help deaf children to continue their education in schools or colleges for hearing persons; aid them in acquiring a practical knowledge of useful trades and business; assist them in obtaining a remunerative employment; bring them into more extensive social relations with hearing persons; and employ such means for their advancement as may be deemed advisable." So beneficial has been the work of this Association, that similar organizations have been formed in other cities, including Chicago, Milwaukee, Detroit, Cincinnati, Los Angeles, San Francisco and Oshkosh, as well as in certain cities in other countries.

In July, 1897, in an address to the Parents' Association of Baddeck, Cape Breton, Nova Scotia, Miss Fuller said: ".... In the Horace Mann School, which you know is for deaf children, we had realized, what every teacher comes to know, that the value of her work is greatly enhanced if supplemented by an abundance of material;—books to expand thoughts upon the subjects for study, maps and charts to fix clearly in mind historic places and events; specimens of substances from the animal, vegetable, and mineral kingdoms for giving clear conceptions of some of the endless varieties of earth's productions. Every household, however humble, can contribute something to such collections and thus bring parents, pupils, and teachers into close and sympathetic life. Common household articles in use for food,—materials for clothing and shelter, which, if already happily known by name to the child, may serve as a topic for language work,—sections of logs with branches having leaves, buds, blossoms or seeds by which children may recognize characteristics and classes; salt, spices, medicinal liquids; manufactured goods, from faraway places, which could be lent or given for purposes of instruction. The stories of real things are often more fascinating to very young children than are story-book tales of the sayings and doings of other children. 'Let the chair tell a story now,' or 'let the stove tell a story,' are requests very familiar to teachers, who have through common things such as knives, spoons, cups, windows, houses, etc., led their pupils into a fairy-land which only children know how to enjoy.... Children cannot live too close to Mother Nature, and parents will do well to foster the spirit of inquiry, which these wonder-loving little souls naturally exhibit when they see the daily miracles wrought by her. No amount of time or effort in later years will compensate for a loss of sympathy and encouragement during this, the perceptive period of life.

"The school is but an extension of the home, and the teacher —the representative of the parents during five or six hours of the day—is doing for the child what each father or mother would do, did time and opportunity permit. Sympathy, cooperation and entire harmony should characterize the relation between parent and teacher, and both should have a good knowledge of child nature and child need. The purpose of the Horace Mann School, in Boston, has been to serve the best interests of the children in their homes as well as in the school-room, and the Parents' Association designed as a direct aid to both, is dominated by a similar spirit. Nearly all of its members are busy fathers and mothers who cannot well take time from their daily occupations for anything that does not appeal to them as a duty, but on the appointed evenings for meetings of the Association, the attendance has been a gratifying evidence of interest."

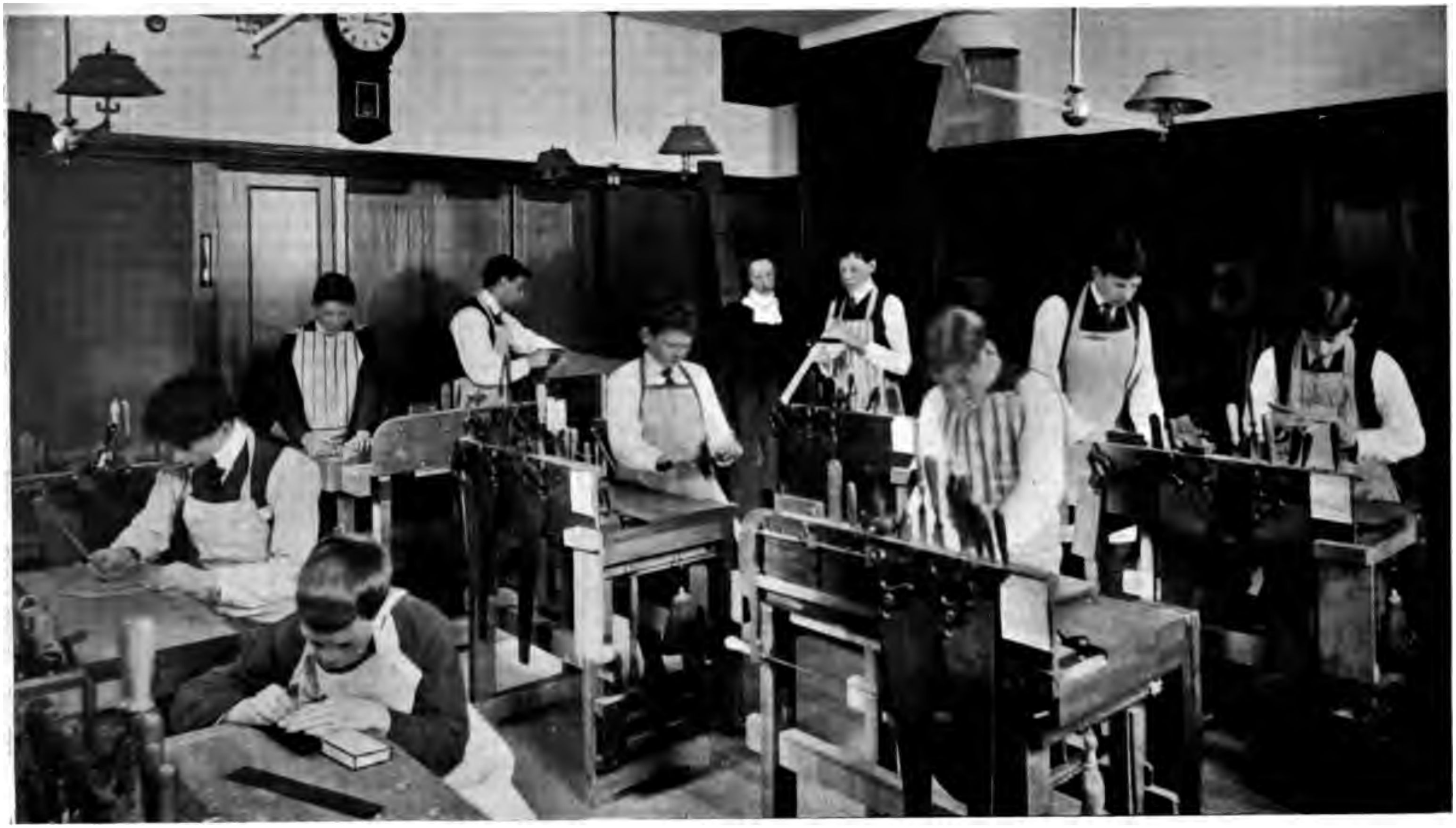
Another great blessing that is in part credited to the excellent influence of the Horace Mann School was the appointment of the Royal Commission to examine into the whole subject of the education of the deaf, as related by Mr. Hubbard. Dr. J. C. Gordon wrote that "this commission endeavored to examine the whole field of deaf-mute instruction with characteristic British thoroughness and energy. Schools upon the Continent were visited, and in London the commissioners held over one hundred and sixteen sittings, calling before them forty-three persons as experts specially interested in the welfare of the deaf, and deemed capable of giving information of great value upon the subjects of inquiry." The complete report of the commission covers 1,574 pages, and its recommendation to the British Parliament in 1889, was that every child who is deaf should have full opportunity of receiving its education by the pure oral method.

The high esteem in which thoughtful parents hold the work of the Horace Mann School, is shown in the gifts it receives from time to time. Space will not permit an enumeration of each gift, but among the number the following may be cited:

In 1893, the sum of two thousand dollars was received from the estate of Samuel E. Sawyer. This gift was invested in the bonds of the City of Boston, and the income is expended for the benefit of the pupils.

In 1896, the school committee reported that the Horace Mann School "has been greatly enriched the past year through the kindness of Mr. Henry W. Putnam. By his liberality the grammar hall was beautifully decorated, the walls tinted and set with friezes, and the gift of appropriate busts, pedestals and vases received. All was done under the artistic supervision of Mr. Ross Turner. It is with pleasure that we record the continued interest in the school displayed by its friend and patron, Dr. Alexander Graham Bell, who gave fifty dollars for the purchase of a typewriter for school uses. Another substantial gift of money for the children's school library was made on behalf of a girls' sewing society in Jamaica Plain, Massachusetts, by a daughter of James C. Davis, Esq."

In 1897, the school committee reported that the Horace Mann School received a "gift of two hundred dollars from Mrs. John McCandlish, for the purchase of books for the school library. This generous donation is the direct result of the influence of the Boston Parents' Education Association. There was also a gift from Mr. John McCandlish, of one hundred and twenty-five dollars towards a memorial tablet to Francis Green, the first man in this country to urge the need of schools for teaching deaf children by the oral method. Dr. Alexander Graham Bell has given fifty dollars for the same purpose. Mr. S. D.



HORACE MANN SCHOOL WORKSHOP

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Warren has again kindly remembered the school with the sum of one hundred dollars to defray the expenses of printing. We would also acknowledge other gifts in small sums. These were used to pay expenses of pupils visiting places of historic interest, in connection with class work."

In 1903, the report of the school committee reads: "Others than those immediately connected with the work are valuing the Horace Mann School, as seen by the legacy of one thousand dollars left it during the year by the late Elizabeth Lewis. Recognition has also come from out of the State, the school having received as a gift the Century Dictionary (ten volumes and a bookcase) from leading residents of a New Hampshire town, in appreciation of what Miss Fuller and the special teacher of articulation had done in behalf of an adult inhabitant during a vacation."

The origin of many other blessings to humanity are directly traceable to the Horace Mann School, and not the least among the number is the invention of the electric-speaking telephone. At the seventy-fifth anniversary of the opening of the Horace Mann School, Dr. Alexander Graham Bell stated that "the School Board of Boston, at the solicitation of Miss Fuller, your worthy principal, invited me to visit the United States for the purpose of helping her teachers in their efforts to teach the deaf children of Boston to speak, and to understand speech by watching the movements of the mouth; and in April, 1871, I entered upon the work.... It is only right that it should be known that the telephone is one of the products of the work of the Horace Mann School for the Deaf, and resulted from my attempts to benefit the children of this school. I am proud indeed to think that twenty-three years ago I was myself a teacher in this school; I am proud to think that I have been a teacher of the deaf ever since."

In its annual report for 1905, the committee on the Horace Mann School wrote: "The recent death of the distinguished philologist, Prof. Alexander Melville Bell, recalls his courteous response, in 1870, to an invitation from the committee on this school to visit it and tell the teachers how his system of phonetic writing, named by him 'Visible Speech,' could be made useful in the development of the speech of deaf children. Perhaps we can make no greater acknowledgment of indebtedness to Prof. Bell and to his system of visible speech than to say that it continues to be the basis of all instruction in speech in this school. The result of his visit was the employment of his son, Alexander Graham Bell, as a special instructor in the school for a period of three months."

On November 10, 1897, a bronze tablet was placed on the wall of the Horace Mann School, in memory of Francis Green, "The first man in this country to advocate the oral method of instruction for the deaf." The inscription reads:

In memory of

FRANCIS GREEN,

Earliest American Advocate in Behalf of the Education
of the Deaf,

Born in Boston, 21 August, 1742;
Died in Medford, 21 April, 1809.

A Graduate of Boston Latin School, 1756, and of Harvard College, 1760; an Officer in the British Army, Where he Served with Distinction; and the Author of "*Vox Oculis Subjecta*" (London, 1783), an early work on the instruction of the Deaf, and a writer for the Newspapers on that subject.

This tablet is a fitting testimonial to a native of Boston, who not only advocated instruction in articulation and speech-reading, in this country and in England, but "was active in promoting the establishment of a free school for the deaf" in England, and unsuccessfully endeavored to have such an institution established in America. During more than twenty-five years he put forth earnest and continued efforts in behalf of the deaf, and contributed many articles on the subject of the education and alleviation of the deaf, to the *New England Palladium*, the *Boston Courier*, and other periodicals. He also compiled statistics concerning the name, age, sex and residence of the deaf in Massachusetts. His interest in behalf of the deaf was aroused through finding that his own son Charles Green, born deaf or who lost his hearing before six months of age, could be taught to converse freely. This son was sent from Boston to Edinburgh, Scotland, where he entered Braidwood's Academy, in February, 1780, and in time was able to carry on a conversation orally. Dr. Bell believes that "there can be no doubt that the 'Messrs. Braidwood' (Thomas Senior, and his son John) were among the best teachers of the deaf that the world has yet produced."

Yours sincerely,

Sarah Fuller

CHAPTER XVIII.

MISS SARAH FULLER AND HELEN KELLER.

While Mrs. Mary Swift Lamson, a special teacher of Laura Bridgman (who, by the way, had introduced Miss Rogers to Mrs. James Cushing in 1864, and to Mr. Hubbard in 1865), was abroad in the summer of 1889, Miss Rogers, through a letter of Mr. Lars Havstad of Christiania, learned of a blind deaf-mute, in Norway, Ragnhild Kaata, who was being taught to speak. This seemed so wonderful that Miss Rogers wrote Mrs. Lamson asking if she could not see Mr. Havstad when in Christiania and learn more of this case. This was done and Mr. Havstad arranged a meeting between Mrs. Lamson, the child, and her instructor, Mr. Elias H. Hofgaard. Here Mrs. Lamson learned how ungovernable and miserable the child had been until at sixteen years of age she was admitted to the institution for the deaf at Hamar, in January, 1888, and how Mr. Hofgaard, finally winning her confidence, had taught her to write, speak, and read by touch from the lips in the eighteen months prior to Mrs. Lamson's visit.

Mrs. Lamson was so impressed by this interview that shortly after her return to Boston, in 1890, she called on Miss Sullivan and her pupil, Helen Keller, and related the story of the Norwegian girl to Helen and the earnestness with which she was striving to improve her conversational powers. In "The Story of My Life," Helen has written: "Mrs. Lamson had scarcely finished telling me about this girl's success before I was on fire with eagerness. I resolved that I, too, would learn to speak. I would not rest satisfied until my teacher took me, for advice and assistance, to Miss Sarah Fuller, principal of the Horace Mann School. This lovely, sweet-natured lady offered to teach me herself, and we began the twenty-sixth of March, 1890.

"Miss Fuller's method was this: she passed my hand lightly over her face, and let me feel the position of her tongue and lips when she made a sound. I was eager to imitate every motion and in an hour had learned six elements of speech: M, P, A, S, T, I. Miss Fuller gave me eleven lessons in all. I shall never forget the surprise and delight I felt when I uttered my first connected sentence, 'It is warm.' True, they were broken and stammering syllables; but they were human speech. My soul, conscious of new strength, came out of bondage, and was reaching through those broken symbols of speech to all knowledge and all faith. .... But it must not be supposed that I could really talk in this short time. I had learned only the elements of speech. Miss Fuller and Miss Sullivan could understand me, but most people would not have understood one word in a hundred. Nor is it true that, after I had learned these elements, I did the rest of the work myself. But for Miss Sullivan's genius, untiring perseverance and devotion, I could not have progressed as far as I have toward natural speech...."

At the World's Congress of Instructors of the Deaf (1893), Dr. Richard Elliott, head-master of the Institution for the Deaf and Dumb, Margate, England, in holding that signs have no place in the educational instruction of deaf children, said: "May I not quote the case of Miss Helen Keller as an instance of what concentrated attention to and actual use of 'language,' with all its boundless capabilities, can do, when wisely and exclusively used? And further, may I not with good reason infer that, if it had been the unfortunate lot of that young lady to fall into the hands, for education, of an ardent advocate of the 'sign-language,' her marvellous progress, which is the wonder of the age, would not have existed; and, in place of it, we should have had another instance of the use of the 'language of signs' and another case of the glimmering of knowledge and intelligence they are capable alone of giving."

In 1894, Miss Sullivan, in explaining the progress Helen had made to the delegates to the Chautauqua meeting of the American Association, said:

"Language grows out of life, out of its needs and experiences, and its joys and sorrows and its dreams and realities. At first my little pupil's mind was all but vacant. Up to the time when I began to teach her, she had no means of registering on its blank pages her childish impressions and observations. She had been living in a world she could not realize. *Language* and *knowledge* are like Siamese *twins*,—they are indissolubly connected; they are interdependent. Good work in language presupposes and *necessitates* a real knowledge of things. As soon as my little pupil grasped the idea that everything had a *name*, and that by means of the manual alphabet these names could be transmitted from one to another, I proceeded to awaken her further interest in the *objects* whose names she learned to spell with such evident joy. *I never taught language* for the PURPOSE of *teaching it:* but invariably used language as a medium for the communication of *thought;* thus the learning of language was *coincident* with the acquisition of knowledge. In order to use language intelligently, one must have something to talk *about*, and having something to talk about is the result of general *culture;* no amount of language-training will enable our little children to use language with ease and fluency unless they have something clearly in their minds which they *wish* to communicate, or unless we succeed in awakening in them a desire to know what is in the minds of *others.* From the very first, Helen was eager and enthusiastic in the pursuit of knowledge. In the little story of her life she says: 'I was never still during the first glad days of my freedom. I was continually spelling and acting out words as I spelled them. I would run, skip, jump, and swing, no matter where I happened to be. Everything I *touched* seemed to *quiver with life.* It was because I saw everything with the new, strange, beautiful sight which had been given me.'

"She had one advantage over ordinary children, nothing from without distracted her attention; so that each new thought made upon her mind a distinct impression, which was rarely forgotten. At first I did not attempt to confine my pupil to any systematic course of study. I felt that she would accomplish more if allowed to follow her own natural impulses. I always tried to find out what interested her most, and made that the starting-point for the new lesson, whether it had any bearing on the lesson I had planned to teach or not, and her eager inquiries often led us far away from the subject with which we began. During the first two years of her intellectual life I required Helen to write very little. In order to write with profit to himself a child must have something to write about, and having something to write about, necessitates some mental preparation. The memory must be stored with ideas, and the mind must be enriched with knowledge before writing becomes a natural and pleasurable effort. Too often, I think, children are required to write before they have anything to say. Teach them to think and read and talk without self-repression, and they will write without self-consciousness."

At the request of the superintendent of public schools, Miss Fuller prepared a statement of the instruction she had given to Helen Keller, which reads, in part, as follows:

"The first intimation to me of Helen Keller's desire to speak was on the 26th of March, 1890, when her teacher, Miss Sullivan, called upon me with her and asked me to help her to teach Helen to speak; for, said she, 'Helen has spelled upon her fingers: I must speak.' She was then within three months of being ten years old. Some two years before, accompanied by her mother, Mr. Anagnos and Miss Sullivan, she had visited the Horace Mann School for the Deaf, when her ready use of English, and her interest in the children, had suggested to me that she could be taught to speak. But it was not then thought wise to allow her to use her vocal organs. Now, however, that the attempt was to be made, I gladly undertook the work. I began by familiarizing her with the position and condition of the various mouth parts, and with the trachea. This I did by passing her hand lightly over the lower part of my face and by putting her fingers into my mouth. I then placed my tongue in the position for the sound of ĭ in it, and let her find the point, as it lay perfectly still and soft in the bed of the jaw, just behind the lower front teeth, and discover that the teeth were slightly parted. After she had done this I placed one of her forefingers upon my teeth and the other upon my throat, or trachea, at the lowest point where it may be felt, and repeated the sound ĭ several times. During this time, Helen, standing in front of me in the attitude of one listening intently, gave the closest attention to every detail; and when I ceased making the sound her fingers flew to her own mouth and throat and after arranging her tongue and teeth she uttered the sound ĭ so nearly like that I had made, it seemed like an echo of it. When told she had given the sound correctly she repeated it again and again. I next showed her, by means of her sensitive fingers, the depression through the centre of the tongue when in position for the sound of ä, and the opening between the teeth during the utterance of that sound. Again she waited with her fingers upon my teeth and throat until I sounded ä several times, and then she gave the vowel fairly well. A little practice enabled her to give it perfectly. We then repeated the sound of ĭ and contrasted it with ä. Having these two differing positions well fixed in her mind I illustrated the position of the tongue and lips while sounding the vowel ō. She experimented with her own mouth, and soon produced a clear, well-defined ō. After acquiring this she began to ask what the sounds represented, and if they were words. I then told her that ĭ is one of the sounds of the letter i, that ä is one of the sounds of the letter a, and that some letters have many different sounds, but that it would not be difficult for her to think of these sounds after she had learned to speak words. I next took the position for ä, Helen following as before with her fingers, and, while sounding the vowel, slowly closed my lips, producing the word *arm*. Without hesitation she arranged her tongue, repeated the sound, and was delighted to know that she had pronounced a word. Her teacher suggested to her that she should let me hear her say the words *mamma* and *papa*, which she had tried to speak before coming to me. She quickly and forcibly said, '*mum mum*' and '*pup pup*'*!* I commended her efforts, and said that it would be better to speak very softly, and to sound one part of the word longer than she did the other. I then illustrated what I wanted her to understand by pronouncing the word *mamma* very delicately, and at the same time drawing my finger along the back of her hand to show the relative length of the two syllables. After a few repetitions the words *mamma* and *papa* came with almost musical sweetness from her lips.

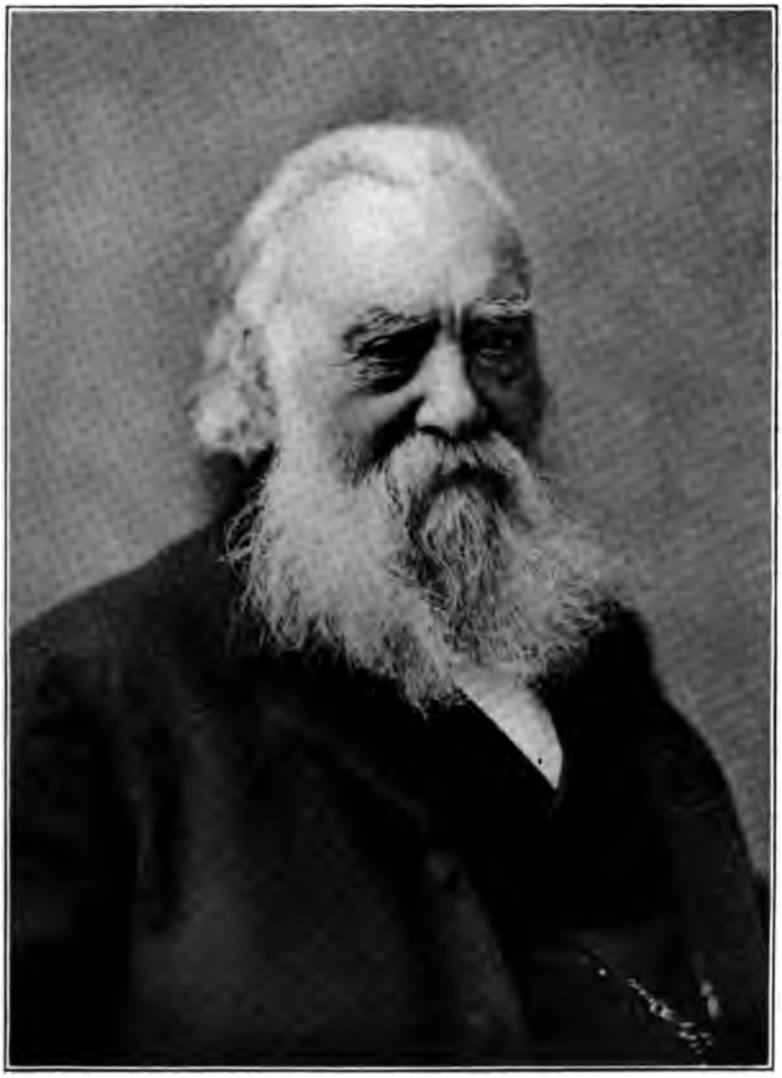
"This was her first lesson. She had but ten lessons in all, although she was with me at other times talking freely, but not under instruction. The plan was to develop, at each lesson, new elements, review those previously learned, listen to all of the combinations she could make with the consonants as initial and final elements, and construct sentences with the words resulting from the combinations. In the intervals between the lessons she practised these with Miss Sullivan. She was an ideal pupil, for she followed every direction with the utmost care, and seemed never to forget anything told her. On the day she had her seventh lesson (April 19th) she and Miss Sullivan were invited with me to lunch at the house of a friend. While on the way there Miss Sullivan remarked that she wished Helen would use the sentences she had learned, and added that she seemed unwilling to do so. It at once occurred to me that the cause of her reluctance was her conscientious care to pronounce every word perfectly; and so, in the moments I had with her during the visit, I encouraged her to talk freely with me while I refrained from making corrections. This had the desired effect. In going about the house of our friend she asked a great many questions, using speech constantly. In the presence of all she told of her studies, her home, and her family. She also told of a visit to Dr. Oliver Wendell Holmes a short time before when she 'talked' to him. Noticing her words as she spoke, there were but four which I did not readily understand. These I asked her to spell on her fingers. Her enjoyment of this, her first experience in the real use of speech, was touchingly expressed in her remark to Miss Sullivan on her way home, 'I am not dumb now.' In a conversation, some two weeks later, with Dr. Bell, Miss Sullivan, and myself, a still greater freedom in the use of speech was noticeable. Miss Sullivan fully appreciated the victory gained; for she wrote to Mr. Anagnos, two months after Helen had taken her first lesson, 'Think of it ! Helen achieved in less than two months what it takes the pupils of schools for the deaf several years to accomplish, and then they do not speak as plainly as she does.' "

Six years after Helen Keller received the first lessons from Miss Fuller, she delivered a brief address at the summer meeting of the American Association, at Mt. Airy, saying, in part, "If you knew all the joy I feel in being able to speak to you today, I think you would have some idea of the value of speech to the deaf, and you would understand why I want every little deaf child in all this great world to have an opportunity to learn to speak. I know that much has been said and written on this subject, and that there is a wide difference of opinion among teachers of the deaf in regard to oral instruction. It seems very strange to me that there should be this difference of opinion; I cannot understand how any one interested in our education can fail to appreciate the satisfaction we feel in being able to express our thoughts in living words. Why, I use speech constantly, and I cannot begin to tell you how much pleasure it gives me to do so.... It brings me into closer and tenderer relationship with those I love, and makes it possible for me to enjoy the sweet companionship of a great many persons from whom I should be entirely cut off if I could not talk...."

In the *Ladies' Home Journal*, for November, 1903, Helen Keller explained some of the things she would like to do after graduating at Radcliffe. Among other most interesting statements, she wrote: "I have discovered that the material with which we work is everywhere and in abundance. I have felt the joy of the strong man who grasps the reins in his hands and drives the forces that would master him. Our worst foes are not belligerent circumstances, but wavering spirits .... the occupations I can engage in are few, but into each one I can throw my whole strength.... I am very much interested in work that women may do in the world.... I think the degree of a nation's civilization may be measured by the degree of enlightenment of its women.... Above all must I interest myself in the affairs which concern the deaf and blind.... I often think I shall live in the country and take into my home a deaf child and teach him as Miss Sullivan has taught me. For years I have observed the details of her method and her example in word and deed has inspired me so that I feel that I could impart to a child afflicted like myself the power to see with the soul and understand with the heart. All his needs and difficulties would be intelligible to me since I know the darkness he sees and the stillness he hears. The road he must travel I have traveled; I know where the rough places are and how to help him over them. This would be the directest and most joyous way of doing for another what has been done for me.... No work, however, can mean so much to me as what I can do for the deaf and the blind."

On Helen Keller Day at the Louisiana Purchase Exposition, October 18, 1904, Miss Keller said, among other good things: "Many have been invited here because of learning, skill, or achievement; for their contributions to the beauty and art of the world. I am here, not for what I have done, but for what has been done for me—to raise me to the level of those that see and hear. I testify to what the good and grand have done for deprivation and infirmity. My evidence is of able men and women who have done what they could to unstop ears, open eyes, give speech to the lips of the dumb and light to darkened minds. I enter with you into the community of living speech, and for the joy of speech I express my heartfelt gratitude.... God bless the nations that provide an education for all."

In "The Story of My Life," Helen Keller wrote: "When I was about six years old, my father heard of an eminent oculist in Baltimore, who had been successful in many cases that had seemed hopeless. My parents at once determined to take me to Baltimore to see if anything could be done for my eyes....When we arrived at Baltimore, Dr. Chisholm received us kindly; but he could do nothing. He said, however, that I could be educated, and advised my father to consult Dr. Alexander Graham Bell, of Washington, who would be able to give him information about schools and teachers of deaf and blind children. Acting on the doctor's advice, we went immediately to Washington to see Dr. Bell, my father with a sad heart and many misgivings, I wholly unconscious of his anguish, finding pleasure in the excitement of moving from place to place. Child as I was, I at once felt the tenderness and sympathy which endeared Dr. Bell to so many hearts, as his wonderful achievements enlist their admiration. He held me on his knee while I examined his watch, and he made it strike for me. He understood my signs, and I knew it and loved him at once. But I did not dream that that interview would be the door through which I should pass from darkness into light, from isolation to friendship, companionship, knowledge, love."



Alexr. Melville Bell

CHAPTER XIX.

ALEXANDER MELVILLE BELL'S VISIBLE SPEECH.

A factor that materially contributed to the success of the oral movement in America, and one that proved especially serviceable in paving the way for the immediate introduction, under favorable circumstances, of the teaching of articulation in sign institutions, and in gradually softening, if not in entirely dissipating, the antagonistic attitudes assumed by some of the teachers of signs and gestures in the older institutions, was the system of Visible Speech invented by Prof. Alexander Melville Bell. Visible Speech dealt with articulation pure and simple; it was not necessarily associated with lip-reading any more than it was with gestures and signs; nor would it take any part in the conflict between advocates of articulation on the one hand, and teachers of signs and manual alphabets on the other. It was a simple, yet a scientific method, the comprehension of which aided in giving articulation to deaf-mutes. Thus it was welcomed when, in those pioneer days, oral teaching was scoffed at by those who believed in and endeavored to teach a language of signs which they claimed was "so natural that it becomes a part of the deaf, as much as speech is of the hearing, and may completely answer for every use of speech," a language which, when properly delineated, would, it was claimed, reveal "the inmost workings of the soul," while the "various thoughts and feelings, with their fainter and stronger shades of distinctive character (would) beam out through the eye, countenance, attitude, movement, and gesture."

Professor Bell's system of Visible Speech is a plastic yet comprehensive key to the correct pronunciation not only of English, but of all languages, its applicability in linguistic studies being acknowledged through its use in educational institutions in many countries. Moreover, it affords a method of preserving a standard of pronunciation in all languages, for, guided by these symbols, sounds may be correctly uttered though the person giving them may never have heard the sound or known of such a sound. The forms of the symbols have direct reference to the particular vocal organs to be used and the definite position which the organs of speech must assume in the production of a given sound. Thus, once the simple basic principles are understood, it only becomes necessary to place the vocal organs in certain positions, and emit breath or voice to produce certain definite and intelligible sounds.

In the letter of other alphabets the little curves and straight lines composing the characters have no significance; but in Professor Bell's system each line and each curve represents the definite vocal organ to be used. Thus, any articulate sound which the human organs are capable of making can be represented by these symbolical abbreviations, just as chemists represent the elements and their chemical combinations by the use of symbols acceptable the world over. There are only ten characters, and when combined just as we combine certain of the twenty-six letters of the alphabet to form words, these symbolical representations of the elements of sound, read: "Put your tongue in this position," or "put your lips in this position," or "make a certain attempt to expel your breath," and such and such a sound will be the result. In other words, the characters recall, not ideas, but positions of the vocal organs; they lead to correct articulation, which then leads to ideas and the expression of ideas. In the words of a prominent teacher: "What is wanted in the case of deaf-mutes is something to start their vocal machinery and guide its action. That is precisely what Mr. Bell's symbols do. Just as the blind by the palpable alphabet take in printed languages, so the deaf by Visible Speech take in the oral languages. There is a difference in mode, none in principle. In each case a sense possessed takes the place of a sense not possessed."

Professor Alexander Melville Bell was born in Edinburgh, Scotland, on March 1, 1819, and died in Washington, D. C., on August 7, 1905. Although eighty-six years of age, he remained hale and hearty almost to the end. For nearly seventy years he was in the harness, yet remained an acknowledged authority on correct pronunciation, on the teaching of articulation to the deaf, and on all matters appertaining to elocution. Students at Oxford, at Johns Hopkins, at Columbia, and other universities, have enjoyed his lectures, while twenty-six of his text-books and charts are in daily use in many schools. His system of Visible Speech is the standard with many teachers of the deaf, and in many foreign schools for the hearing, is being "applied in Japanese institutions to the teaching of all foreign languages," and is used by missionaries in China.

The evolution of his system of Visible Speech began in 1842, when he announced the formulation of a new theory of articulation and vocal expression, based on the position the respective vocal organs assume during speech. During the next seven years he improved and developed this theory into practicable form. Then, after many and varied experiments in the formation of the elementary sounds by the vocal organs, in 1849, he published it under the title of "A New Elucidation of the Principles of Speech and Elocution," and quickly won much praise from discriminating educators who appreciated the scientific value and the originality of his work. Of the purity, charm, and perfection of his speech, an eminent professional colleague said: "I have never before, and I do not know that I have since, heard English spoken with the ease and delicate precision that so distinctly marked the speech of Mr. Bell. His clear-cut articulation, his flexibility of voice, and finely modulated utterance of English, was an exemplification of what efficient and long-continued training of the vocal organs will do for human speech, and how charming the result."

From 1843 until 1865, Professor Bell lectured on elocution and the principles of speech in Edinburgh University, and other educational centers. Then, following the death of his father in London, in 1865, he transferred his classes in Edinburgh to his eldest son, Melville James Bell, moved his family to London and accepted the appointments of professor of vocal physiology and lecturer on elocution in University College. There he completed his development of the science of universal alphabetics, and published it under the title of "Visible Speech," in the belief that it would be serviceable not only in teaching English, but prove "equally applicable to all languages."

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ducted at home until his tenth year, when he entered M'Laren's Academy at Stockbridge, Edinburgh. There he remained a year and then entered the Royal High School, taking the regulation course under the tuition of Dr. Donaldson. Graduating at the age of fourteen, he spent a year as English master in Mr. Skinner's Academy, at Elgin, Scotland, then returned home and matriculated at the University of Edinburgh, where he attended lectures on Latin under Dr. Sellers, and Greek under Professor Blackie. Qualifying as a tutor he accepted a temporary position in the Weston House Academy, at Elgin, where he prepared himself for entering the University in London. Meanwhile his parents had moved to London, and on the death of his youngest brother, in 1867, Graham joined his father and became his professional assistant. Then he took a course in anatomy at the University College, England, and matriculated at the London University, 1868.

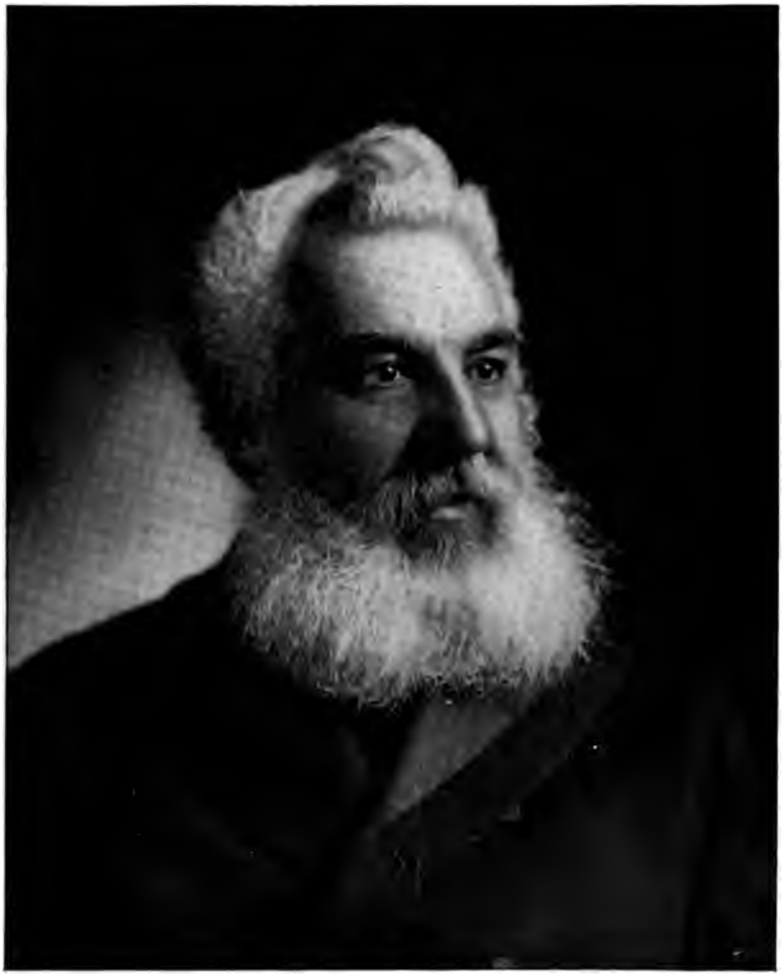
One of Prof. Alexander Melville Bell's pupils in phonetics was Miss Susanna E. Hull, who, in 1863, opened a private school for deaf children at 102 Warwick Gardens, South Kensington, London. She explained to Professor Bell her belief that Visible Speech would prove serviceable in teaching speech to deaf-born children, and he, perceiving the value of her suggestion, sent his son Graham to apply the system in her school. Very soon her "pupils learned to speak, those who had been born deaf even better than those who had become so through fever, and they could also read some few sentences from the lips." But, at that time neither Miss Hull nor Professor Bell nor his son Graham, had much faith in the availability of speech-reading. Nevertheless this experience in teaching the deaf was one of the steps that led to the invention of the electric-speaking telephone in Massachusetts.

Referring to these early efforts, Miss Hull said: "At last (1870) Miss Rogers came and gave me fresh hope. She told me facts from her own knowledge and observation and her faith kindled mine." In 1872, Miss Hull visited the Clarke School, at Northampton, where her doubts and difficulties concerning speech-reading were all removed by witnessing Miss Rogers' success in teaching her pupils to read speech, and so convincing were the proofs that she adopted it as the means she "had so long sought, by which the deaf would be most fully restored to home and social life."

In 1867, Graham's younger brother, Edward Charles Bell, died at the age of nineteen. Three years later, the elder brother, Melville James Bell, who had succeeded to his father's work in Edinburgh, passed away. Graham, though twenty-two years of age, was slim and delicate, while his health had been impaired by over-study in connection with his college classes, by a too constant application to his electrical experiments, and by an ardent devotion to the interesting and successful work of teaching deaf-mute children to talk. Thus it was thought desirable for Graham to have a change of climate and a cessation from all study. And because, in 1841-42, the father, after a severe illness, had spent two years in Newfoundland, and had "found its bracing climate and pure air so beneficial that the visit undoubtedly laid the foundation of robust manhood," he naturally turned to America for relief. Again, Professor Bell had delivered a series of lectures in Boston, in 1868, and had been invited to again lecture in that city in the fall of 1870.

In July, 1870, Alexander Melville Bell resigned the positions he held in London, and moved his family to Canada. There he established a new home in the country at Tutelo Heights, about four miles north of the city of Brantford, being "happily led there by the accidental proximity of an old friend," and intending "to give the climate a two years' trial." After a month's experience in his new home, Graham Bell began to thrive and grow robust, while the health of his father, who had secured the appointment of professor of elocution in Queen's College, in Kingston, was materially benefited.

Before deciding to move to Canada, the father had endeavored to secure a position for Graham as instructor in one of the institutions for the deaf in the United States. Graham also personally applied for an opportunity to show what his method might accomplish. But there were no vacancies in the institutions to which application was made, while the authorities were not inclined to look with favor upon the introduction of this young man's proposed method of teaching the "dumb" to talk. The officials of some of these institutions had been exceedingly annoyed by the many inquiries relatives and friends of pupils were sending in about the reported results attained by an heretical spinster over in Massachusetts who had actually had the audacity to undo the work of the Creator, by teaching deaf-born children to talk! Why should parents want their dumb children to talk? If an all-wise and beneficent Father had intended that His children should talk, He would not have stricken them with "dumbness," was the belief that prevailed in many institutions in those days; a belief that appeared quite plausible to parents whose children were taught by means of a sign-language in which gestures displaced good and bad English. In other words, nearly all of the instructors of the deaf were sign-teachers, who believed that it was a lamentable waste of time and effort to attempt to teach speech and speech-reading to the "dumb," as children afflicted with deafness were then classed.



Alexander Graham Bell

CHAPTER XX.

TEACHING VISIBLE SPEECH.

During the winter season of 1868-69, Prof. Alexander Melville Bell delivered a series of six lectures on Elocution and on the value of his symbolic system of Visible Speech in the teaching of languages, at the Lowell Institute, Boston. During one of these lectures he referred to the aid that Visible Speech had rendered to teachers of deaf children in England. Miss Sarah Fuller, then a teacher of hearing children, attended these lectures and was deeply impressed by the apparent simplicity of Visible Speech and by what was said of its helpfulness to teachers of deaf children. When she was invited to take charge of Boston's School for the Deaf, she recalled Professor Bell's lecture and at once endeavored to learn more about his system of Visible Speech. The Professor had returned to England, but she found certain of his publications in the Boston Public Library. She consulted Prof. Lewis B. Monroe (who had so warmly espoused Mr. Hubbard's cause, and had certified to the good results accomplished by Miss Rogers with the oral method), but he thought that direct personal teaching from one who fully understood Visible Speech was necessary, if it were made the basis of instruction in speech to deaf children. As Miss Fuller could learn of no one in America who possessed the knowledge requisite to teach the system, she could only await Prof. Bell's return to this country.

On Tuesday evening, October 25, 1870, he opened the Lowell lectures for the season by delivering the first of twelve lectures on Shakespeare and some of his plays. At Miss Fuller's earnest solicitation the members of the School Board called upon Professor Bell and invited him to visit Miss Fuller's school. He graciously accepted the invitation, and after visiting the different classes, expressed his approval of the attainments of the pupils. Miss Fuller then broached the subject of Visible Speech, and he told of the help that his system had been to deaf pupils and their teachers in England. In reply to an inquiry whether during the six weeks he would remain in Boston, he could find time to instruct the teachers in Miss Fuller's school in Visible Speech, he said that he had spent twenty years in developing the system, and did not wish to undertake the work of instruction. However, the knowledge of his son Graham concerning the system was as thorough as his own, and the service of the son could be secured to give the needed instruction if the School Board so desired.

The suggestion was taken under consideration and after thorough discussion, on February 21, 1871, the motion was passed that "the Committee be permitted to expend a sum not exceeding $500 for the purpose of special instruction in said school." Then a formal invitation from the School Board was extended to Graham Bell to give instruction to the teachers in the Boston School for the Deaf, during a period of three months. This invitation was accepted, as explained in a previous chapter, and thus it came about that Miss Sarah Fuller helped to lay the foundation for many of the blessings that humanity has derived from Dr. Bell's efforts to promote the welfare of others.

In the bracing climate of the north Graham Bell had regained his health and grown robust. So, in April, 1871, he accepted the appointment of teacher of articulation, or rather of instructor of teachers of articulation to the deaf, in what is now the Horace Mann School, but which was then "a very little school, an experimental school." In the beginning he was employed about six weeks, dividing his time between the practical instruction of the pupils and the teaching of the theory of the system to the teachers.

In after years, Dr. Bell publicly said: "I can remember with somewhat of amusement the feelings which actuated myself when I first came into contact with this school. As a student of the mechanism of speech, familiar with it from my childhood, this subject, in fact, having been the professional study of my family for three generations, I realized that deaf children whose vocal organs were perfect could be taught to speak. I understood, of course, that no one naturally speaks a language that he has never heard, and that as a matter of course a child who has never heard the English language could only acquire it by instruction. I was therefore prepared for the claims of my friend, Miss Fuller, that the deaf children of the city of Boston could be taught to speak. But I must confess that I was extremely skeptical in regard to the possibility of their understanding speech by watching the movements of the mouth. It is more difficult for one who is familiar with the mechanism of speech to realize the possibility of this than for one who is ignorant of it; and to be candid, I did not believe it. Of course I was too polite to say so to my friend, Miss Fuller; but still there was that lurking feeling in my mind, that the claim that deaf children could understand the speech of their friends, to any great or useful extent, was too broad. Observation, however, assured me that the children really did seem to understand, to a very useful extent, the utterance of their friends and their teachers; they were not deaf at home; they were not deaf with their teachers; and my curiosity was so much aroused to ascertain the cause of what seemed from my point of view impossible as to *lead me to make the instruction of the deaf my life work*."

Notwithstanding his skepticism Graham Bell so heartily entered upon his duties of instructing the teachers in the proper use and value of the system invented by his father, that when a public exhibition was given on June 13, six weeks after instruction began, "it was shown," the school commissioners reported, "that the very youngest children had comprehended the meaning of the symbols. Taking the school as a whole, it was found that during the month of May over three hundred English sounds, which the pupils had formerly failed to utter by imitation, had been obtained by means of Visible Speech. Class illustration was given of the pronunciation of syllables with differences of accent and quantity, and individual illustrations of the perfect utterances of words and sentences. Adult deaf-mutes were present who had acquired all the sounds of the English language in ten lessons, and who could articulate a large number of words with absolute correctness. One pupil of the school, to whom special instruction had been given in the principles of elocution, read Longfellow's 'Psalm of Life,' from elocutionary marks with natural and expressive inflections of the voice...."

All that may seem very trite thirty-five years later. Nevertheless it was the sensation of the day among the educators of that time. And perhaps its relative value in further stimulating public sentiment in favor of oral education for the deaf, may be shown more clearly by a brief quotation from the report the school committee had made only a few months previous: "The teachers are working with extraordinary patience and earnestness, and the results of their instruction have exceeded expectation. Still it is a question whether it will not be found necessary to supplement the method here used by others, which have long been employed, *such as the manual alphabet or the natural language of signs.*"

How different was the tenor of the official report twelve months later, when the supposed need of signs and manual alphabet had vanished, and achievement and victory permeated every line of a report pregnant with the possibilities that make for and underlie all happiness and all welfare of deaf children: ".... Perhaps nothing has contributed so much during the year to the value of the instruction of this school, as the introduction of Visible Speech.... By means of this system *deaf-mutes can be taught to articulate correctly.*" And Miss Fuller stated that "if we had begun our work with a full knowledge of this system, we should have been spared a great amount of difficult and often discouraging labor, and produced much better results." And, later, she stated that "the widespread interest felt in this country in articulation teaching, and the success of the work, are undoubtedly due to the system of Visible Speech."

In 1871, Graham Bell instructed the teachers in the Clarke school in the use of his father's system of Visible Speech. The annual report states that "better results have been attained in three months than ever before in the same period of time; and in the matter of tone, compass, modulation, and inflection of the voice, results never before attained at all." A report dated October 1, 1872, stated: "Greater and better results have been obtained with new pupils, than were possible by the German method. On the part of advanced pupils too, some defects in articulation have been corrected which imitation had failed to correct."

After instructing the teachers at the Clarke School, at Northampton, and teachers in other schools, Graham Bell returned to Boston and resumed his instructions at Miss Fuller's school. In the annual report of the school commissioners are the details of an examination held in December, 1871, to exhibit the progress several pupils had made. One of these pupils was Miss Dudley, the daughter of the member of the legislature who was working earnestly in behalf of deaf children. The report states that Mr. Bell said: "Miss Dudley has been under my instruction for three months. The improvement manifest may be emphatically summed up in the one word 'power.' She has obtained power over the instrument of speech, — such power that she can produce the elementary sounds of foreign languages as well as those of English, by merely studying their symbols; that she can vary her voice in *quality* as well as pitch, sustain it on a level, or inflect it at will, and that she can appreciate certain musical intervals. I have devoted principal attention to Miss Dudley's articulation. In Miss Jennings' case I have aimed at the cultivation of the voice, and the communication of elocutionary principles. Miss Dudley varies her voice *mechanically*, but Miss Jennings can now associate a feeling with every inflection. The latter also possesses the mysterious power of appreciating *relative pitch*. Both of these young ladies are apparently *totally deaf*. I shall now write a few exercises on the board for Miss Dudley to read. The sounds will be of such a nature that it would be impossible for her to give them by imitation alone. I shall write German and French sounds, and some in the Zulu language containing Hottentot clicks that would defy the imitative powers of anyone here present." The report adds: "Mr. Bell then wrote on the board in symbols of Visible Speech sentences in English, in German, and in French, and some words in the Zulu language containing Hottentot clicks never heard in our speech; all of which Miss Dudley read slowly, but with surprising correctness, and gave the clicks in a way nobody else could imitate. She afterwards read from her symbols of Visible Speech the Lord's

Prayer, slowly but very distinctly, with almost faultless articulation, and with apparently deep feeling."

On June 19, 1871, the superintendent of the schools in Boston, Mr. John D. Philbrick, in referring to the examinations in Miss Fuller's school, wrote: "I wish to express very strongly my approval of the course of your committee in employing Mr. Graham Bell to teach Visible Speech in your school. The results of his instruction are more than satisfactory, they are wonderful. His system must speedily revolutionize the teaching in all articulating deaf-mute schools." And at the close of the year Mr. Philbrick wrote: "The result of this experiment with Visible Speech seems to be very significant. It convinced me of the practicability of teaching even congenital mutes perfect articulation, and, also, that by the system of Visible Speech good articulation can be secured in much less time than is required to produce the same result without its use. It is in fact a new and powerful instrumentality in the instruction of deaf-mutes."

The year following his remarkable achievements in Miss Fuller's school, Graham Bell was invited to the leading institution for the deaf in America, and the stronghold of advocates of the sign-language, the American Asylum at Hartford. It had "completed its fiftieth year" on April 15, 1867, the very year that Mr. Hubbard won educational liberty for deaf children. In its fifty-first annual report the statement appears that "the great mass of deaf-mutes, comprising more than nine-tenths of the whole number, can be satisfactorily taught only by the use, in the first instance of their own natural language of signs."

According to the annual report of the American Asylum, Graham Bell "commenced his labors upon the first of May (1872). .... Instruction was regularly given to a class of twenty-five semi-mutes.... We consider it better than former methods ...." The next year the report stated: ".... Two of the teachers have devoted their whole time to the instruction of forty-six pupils in Bell's method of Visible Speech.... The experiment has been attended with considerable inconvenience and trouble from the necessity for the entirely separate instruction of small numbers at a time, but the improvement made has been decided. Pupils have conquered difficulties in pronunciation and in vocal sounds *unconquerable by previous methods.*" A year later the report read: ".... Visible Speech has proved a powerful aid in their instruction.... Many defects in speech which before were beyond our power to remedy, have been corrected.... We consider Visible Speech as deserving a place in our school." Early in 1873, Mr. Stone stated: "I consider Visible Speech far superior to any method I have known for teaching articulation: *the hopes of the deaf-mutes* in this direction *seem* to *rest upon it.*" And, in August, 1878, Mr. Williams stated: "For the past three years we have given every pupil entering the school a very thorough trial in speech and lip-reading." In the annual report for 1885, attention is called to a student who left the school in 1876, a successful shoe merchant, transacting "business with a great variety of customers, relying almost wholly upon speech and lip-reading."

Yet it was the principal of this same American Asylum, who, nine years before, testified before a joint committee of the Massachusetts legislature, in 1867, that "the recovery of articulation costs more than it is worth. .... the attempt to teach articulation has never been a part of the regular system of instruction of the deaf and dumb, and *I hope never will be*.... We cannot make them (the deaf-born) understand the use of vocal language, with its articulation, its emphasis, its point. It has never been done; *it never can be done.*"

Visible Speech was also introduced in the Washington Institution in 1872, and the following year, Dr. E. M. Gallaudet, previously the pronounced advocate of the value of the sign-language, said, in referring to Prof. Bell's Visible Speech: "Teachers of deaf-mutes generally, are disposed to accept this new process of teaching articulation to the deaf as an important contribution to the existing means of educating this class of persons, and it is believed that within a very few years it will find wide acceptance and approval."

Although Visible Speech was utilized by the leading sign-institutions within three years after its introduction in Boston, in 1871, it must not be supposed that the system encountered no obstructionists in its progress. On the contrary many disputatious individuals, starting with a false conception of its aim and purpose used good paper and printers' ink in striving to prove that "the symbols of Visible Speech can no more assist a mute in his attempts at vocal utterance than the signs of the zodiac. . . . we desire only to demonstrate that the means by which he obtains articulation from deaf-mutes are not the symbols of Visible Speech, but his pupils' sense of vision and feeling, and their imitative faculties; and above all, their teacher's mechanical skill in forcing the tongue into the requisite positions for the respective sounds of the alphabet by means of the manipulator (an ivory blade, or spatula or paper-cutter)." Another writer stated: "We are thoroughly convinced that instead of Visible Speech being a help in teaching deaf-mutes to articulate, it is a great hindrance."

Ten years later, that is in 1884, it was stated that "the cause of articulation for the deaf, in this country, *owes much to Visible Speech*, both from the study of vocal physiology to which it had led, and from the fact that it has offered, through its students, almost the only source of supply for the recent and urgent demand for articulation teachers."

In 1890, at the twelfth convention of American Instructors of the deaf, and the first international convention, Dr. Isaac Lewis Peet, in a scholarly address on "The Relation of the Sign-language to the Education of the Deaf," said: "Articulate speech has been so analyzed that its elements are very generally understood among teachers of the deaf. The positions of the organs employed in producing it have been so clearly defined that the elements of a spoken word are recognizable by the eye, and capable of being imitated by movements of the organs of speech. Speech has been made visible and silence has been made vocal.

"For this result, a debt of grat'tude has been incurred to Professor A. Melville Bell, the distinguished leader in the investigation of vocal physiology, whose works must be regarded as the latest and best authority upon every variety of vocal utterance. By his Visible Speech an alphabetic form may be conferred upon every spoken language that has not already been reduced to writing, and the pronunciation of every written language can be presented to the eye. A similar debt is due to Dr. A. Graham Bell, who, better known to fame through inventions of vast moment, is yet known and honored for having devised and introduced an application of his father's system to the case of the deaf-mute. By following out its principles, it is quite possible to teach every deaf-mute to discern, at first slowly, but afterwards more rapidly, the elements of every word as spoken by his teacher, and then to place his own vocal organs in the position that he has recognized as necessary to the production of what he has been told is sound. In this way every intelligent deaf-mute, may, if his vocal organs be perfect, be taught to give in speech with at least approximate distinctness, such language as he knows, and to read the lips of at least one person."

At the Thirteenth Convention of American Instructors of the Deaf, held in Chicago, in July, 1893, the president of the convention, Dr. E. M. Gallaudet, offered the following resolution, which was unanimously adopted:—"*Resolved,* That the thanks of the Convention of American Instructors of the Deaf are hereby extended to Professor A. Melville Bell, of Washington, for his generous gift of $15,000 to the Volta Bureau for the Increase and Diffusion of Knowledge Relating to the Deaf." And the Convention was informed that Professor Bell had also presented to the Volta Bureau the copyrights to all his valuable publications, and had contributed in other ways to promoting its high efficiency.

At the World's Congress of Instructors of the Deaf, held in Chicago, in 1893, Dr. A. L. E. Crouter, principal of the Pennsylvania Institution for the Deaf and Dumb, in referring "to the suggestive and instructive statistics presented by Dr. Bell" to the Congress, said: ".... In conclusion, I would add my appreciation of the able and exhaustive manner in which these statistics have been collected and collated. The profession is under lasting obligations to Dr. Alexander Graham Bell for the time and study and expense he has so generously bestowed upon this subject, which, to most minds is dry and uninteresting. *To Dr. Bell more than to any other man* not directly connected with the work, are we indebted for the great advance made in teaching speech to the deaf, and in the establishment of oral schools of instruction throughout the country."

CHAPTER XXI.

"NO SINGLE INFLUENCE HAS DONE SO MUCH."

In July, 1891, at the Lake George meeting of the American Association, Miss Caroline A. Yale, principal of the Clarke School for the Deaf, in a valuable paper on the "History and Development of Articulation Teaching in America," said: "Visible Speech is the most scientific attempt that has been made to devise characters which should represent each elementary sound by representing the position necessary to produce it.... Perhaps *no single influence has done so much* for the improvement of articulation work in America as the introduction of the system of Visible Speech. The absence of any possible connection between the symbols and the elements which they represent except through their pictorial character gives them a value intrinsically their own. Though at this date the symbols of Visible Speech are taught to the pupils in but few schools, the distinctness of knowledge which familiarity with them has given some of our teachers cannot be over-estimated, and, in general, in no other way has the work been advanced so much as by the greater attention to the study of ways and means on the part of the teachers."

And at the second summer meeting held at Lake George, in 1892, in an able address on "How Can We Best Fit Ourselves to Teach Speech to the Deaf," Miss Yale said, in part: "A fourth topic for the teacher's study should be the exact *formation of each elementary sound.* This study cannot be made too thorough and critical. The adjustment of the organs, the contour of each, the size and shape of apertures, and the character of the action of each organ should become most familiar. To this end the use of diagrams is of much value, as a means of representing varying positions, and as in themselves abbreviated diagrams no aid is to be compared with a close study of the symbols of Prof. Alexander Melville Bell's 'System of Visible Speech.' So long as these symbols are kept pictorial in their significance the value is immeasurable.... In order to gain a knowledge of the formation and development of English sounds, first of all study Visible Speech."

In view of Miss Yale's conservative statement: "Perhaps no single influence has done so much for the improvement of Articulation Work in America as the introduction of the system of Visible Speech," it is interesting to note the manner in which the general use of Visible Speech was advocated thirty years ago, and to observe how closely the radical ideas then promulgated conform to the accepted teachings of the leading schools today.

In August, 1872, at the National Conference of principals of institutions for the education of the deaf and dumb, held at Flint, Michigan, Alexander Graham Bell advocated the practicability of enabling deaf-mutes to articulate clearly and intelligibly; illustrated his method of instructing deaf-mutes in the elementary principles of Visible Speech; gave a number of difficult tests to show with what accuracy the symbols of Visible Speech may be used in aiding deaf-mutes to acquire the power of mechanical speech, to articulate correctly; stated that he would advise not giving the pupil the meaning of any word until the power of pronouncing it had first been obtained, advising fluency of articulation before definition of the spoken words, etc. After a thorough discussion of the value of Visible Speech, it was unanimously resolved "that the system of Visible Speech impresses the members of the conference as being philosophical, and that it promises great aid in the instruction of deaf-mutes in articulation; that it is deserving of a thorough experiment in our institutions, and that it may be especially useful in the correction of defective utterance among semi-mutes."

An excellent illustration of the breadth and the clearness of Dr. Bell's conception of his subject, in 1872, is shown in the following excerpts from this address at the Flint conference, concerning the quality of the voice, remarks of peculiar interest in view of the experiments he was then carrying on that finally culminated in the inventon of the telephone. Dr. Bell, then only twenty-five years of age, said: "The belief has been and is prevalent, among those who have not examined into the matter, that there is some real defect in the mouth that incapacitates it for utterance, and I know that even some teachers of the deaf and dumb (judging, I presume, from the disagreeable noises made by their pupils) imagine that the throat, at all events, is affected, and hence conclude that the quality of the voice must always be unpleasant. But the fact is that the quality of the voice depends very little upon the throat. Indeed, if we could hear the voice as it proceeds from the glottis, I doubt whether it would be materially different from that produced by the reed of a musical instrument.

"Speech is a mere motion of the air. If we cast a stone into water, we see the ever-widening circles of waves that proceed from the centre of commotion. A somewhat similar series of undulations comes from the mouth of a speaker. On the water each successive ripple is the picture of the one preceding it: but the sound waves that succeed each other are of different shapes and sizes. The number of undulations within a certain space give rise to *pitch*, the height or size of a ripple determines the *force* of *loudness*, and the shape of a wave gives the quality or *timbre*.

"In speech, the air within the lungs is urged forward by the action of the diaphragm into the larynx. It is there split up into waves by the vibration of the vocal chords, and these waves are moulded (so to speak) in passing through the pharynx and mouth. Hence, in any vocal sound the force is produced by the action of the diaphragm, the pitch by the vibration of the vocal chords, and the *timbre* by the pharynx and by the mouth.

"Since we can represent, by means of symbols, any position of the mouth and pharynx, Visible Speech is capable of affecting the quality of the voice. Of all the pupils in the American Asylum I do not think there were more than a dozen whose voices could be called harsh. In every case where the experiment was tried the *timbre* was successfully corrected."

Twenty-three years later, at the fourteenth Convention of American Instructors of the Deaf, held in Flint, Michigan, in July, 1895, Dr. Bell, in referring to the growth of the oral movement, said: "At the first meeting of principals, held in this city in 1872, I presented to the profession the system of Visible Speech that had been introduced by my father, as a means of representing the sounds of all languages, the letters represented the position of the vocal cords, in forming certain sounds, and they saw that this system might become of value to teachers in all schools, by whatever method of instruction, for developing the powers of speech of the pupils. This system was introduced into this country in 1871, by Miss Fuller, whose work you all know. The board met and thought about it, and invited me to come to Boston to make the experiment, and that was the cause of my appearance in this place. The experiment was made, and, as a result, the system was introduced into several schools....."

During the year following his success with the pupils of Miss Fuller and Miss Rogers, and at Hartford, Graham Bell continued to reside at his father's home in Canada, visiting the different institutions in the United States, as requested, and remaining a month or two at each. Then requests from institutions for the deaf increased in number so rapidly as to preclude the possibility of his accepting even a majority. Thus it was thought to be the wiser plan to have the teachers come to Graham Bell. With that end in view he transferred his residence from Canada to the United States on October 1, 1872, and during the next year lived at 35 West Newton Street, Boston. Here he opened a normal training school for the special benefit of teachers of articulation to the deaf, but gave instruction in Visible Speech to teachers, to students desiring to become teachers, and even to deaf pupils.

This normal school was called the "School of Vocal Physiology." The first circular sent out bore the title: "Establishment for the study of vocal physiology; for the correction of stammering, and other defects of utterance; and for practical instruction in Visible Speech, conducted by Alex. Graham Bell, member of Philological "Society of London, England." In this school the theory of his father's system was easily explained and practically illustrated by Dr. Bell. But to afford a greater range in practical demonstrations of the utility of Visible Speech, and of the art of teaching the deaf, he organized a private school of deaf-mutes of all ages to whom free instruction in articulation was given by the students under Dr. Bell's supervision. He also formed a class of hearing pupils having defective speech, to illustrate how readily many defects may be permanently cured. The members of both classes formed excellent experimental subjects for the teachers to practice upon, and at one time there were about sixty prospective teachers under instruction. Later, a manuscript periodical entitled "The Visible Speech Pioneer," was sent to institutions and schools employing Visible Speech in the course of instruction. Dr. Bell also contributed descriptions of his father's system of Visible Speech to several periodicals during 1872.

In 1873, Graham Bell was appointed professor of vocal physiology in the school of oratory of the Boston University where, in addition to training students in the culture of the voice and the mechanism of speech, he continued to give instruction in Visible Speech to all who were preparing to teach articulation to the deaf. But his private school for the deaf was then transferred to Salem.

This school of oratory had been established by Professor Monroe, a noted teacher of expression in elocution and a warm friend of Mr. Hubbard and Graham Bell. Following the commercial acceptance of the telephone, Dr. Bell resigned the professorship and was succeeded by his pupil, Mr. L. A. Butterfield. That particular school is said to have ceased existence on the death of Professor Monroe; but later Mr. Butterfield established another school of instruction in Boston. Mr. Butterfield wrote: "Professor Monroe was preeminently a teacher of expression in elocution, and he left to Graham Bell the teaching of articulation and Visible Speech. These, as Professor Bell said, had been and could be applied successfully to the cure of defects of speech. Those who thoroughly studied this Visible Speech with Graham Bell in these first two years of the school had an excellent groundwork for a cure of these defects."

Speaking of this school in 1884, Dr. Bell said: "A number of years ago the Boston University established in connection with its departments a school of oratory under the leadership of the lamented Lewis B. Monroe, of Boston; and every articulation teacher, whether a teacher of the deaf or a teacher of the hearing, should remember with gratitude the labors of Prof. Monroe. He established this school of oratory in connection with the Boston University for the study of just these subjects,—for the study of elocution, the study of the mechanism of the voice, the study of vocal physiology; and from the pupils of that school were selected a class to have special instruction from me and from others regarding the special needs of the deaf; and from that class were drawn many of the articulation teachers that we have present in this convention. But a few years ago an important event led to my withdrawal from the active work of instruction in the School of Oratory—the invention of the speaking telephone. Another important event destroyed the School of Oratory—the death of Lewis B. Monroe (in the summer of 1879). The special department for the instruction of teachers in the subject of Visible Speech was for some time carried on, and I rather think is still carried on, but not in connection with any school of oratory or in connection with the University, by my late colleague, Prof. Alonzo Butterfield. I hoped to have seen him here in this convention; but not having actually been engaged in the work myself for a number of years, I am really unable to give the condition of this school. If the School of Oratory were still in existence, you would have the very thing you want, but it is all dead."

In 1880, Dr. Butterfield, then professor of vocal physiology and mechanism of speech in the Boston School of Vocal Physiology, wrote: "Visible Speech will be invaluable in mission fields. The difficulties which missionaries have experienced in acquiring the pronunciation of the natives of any country and in teaching the natives the pronunciation of their languages, will readily disappear by the use of this system. Visible Speech has already been introduced into China by a missionary from Scotland. Large portions of the New Testament have been translated into the Chinese spoken language and printed in Visible Speech symbols. The Chinese written language and the Chinese spoken language are two distinct languages. The Chinese spoken language had *never been written nor printed until Visible Speech was employed for that purpose....* The discovery of the principles of Visible Speech has made possible the construction and establishment of a universal language."

On Saturday, January 24, 1874, at the First Convention of Articulation Teachers of the Deaf employing Prof. A. Melville Bell's system of Visible Speech, which met in the High-School building, Worcester, Graham Bell delivered an interesting address on the visibility of speech, dividing his subject into the visibility of elementary sounds, or syllables, of words, and of sentences, showed how context is often the key to lip-reading, suggested aids that the lip-reader should render and those that should come from the speaker, etc. The paper was discussed by Prof. Lewis B. Monroe, Prof. Charles Treat, Dr. Ira Allen, Miss Rogers, Miss Fuller, and others.

On Saturday, June 13, 1874, at the Second Convention of Articulation Teachers of the Deaf, held in Worcester, Graham Bell exhibited several methods of visualizing speech. This will be explained more fully in a following chapter.

On July 17, 1874, at the eighth convention of American Instructors of the Deaf, held at Belleville, province of Ontario, Canada, Graham Bell gave an interesting address on the subject of Visible Speech, and its applicability to the instruction of the deaf. He said:

".... The experiments we have just made prove that a person may be directed by these symbols, *how to pronounce sounds that he has never heard.* Deafness need, therefore, be no bar to the acquirement of articulation, if your teachers will accept assistance from Visible Speech. I know that there is an idea prevalent, even among teachers of the deaf, that there is some real defect in the vocal organs of deaf-mutes that incapacitates them from acquiring a good pronunciation. We do not sufficiently realize the fact that deaf-mutes are dumb, merely because they are deaf. No one would dream of supposing that our mouths were defective because we do not talk Chinese. The simple fact of the matter is that we have never heard that language. It is the same with the deaf-mute. He lives in a world of hearing people, and has been surrounded from his birth by those who talk; but alas! not one sound has ever entered the closed portals of his ears. With all the organs of speech perfect, he is dumb merely because he does not know what to do. If we would teach the deaf-mute to speak, we must of course appeal to other senses than that of hearing. If it were possible for the unassisted eye to discover the mechanism of speech, deaf-mutes would have learned to articulate of themselves long ago; but it is not the case. Many sounds depend upon the adjustment of organs that are quite concealed from observation. By means of these physiological symbols alone can we reveal to the deaf-mute's eye the concealed mechanism of speech. Since there is in the deaf-mute no other natural defect than that of hearing, it is certainly possible to make him like hearing people in every other respect. The time is coming when the term 'dumb' or 'mute' will be considered as a reproach when applied to the deaf. The old dogma 'without hearing, no speech; without speech, no reason,' placed deaf-mutes hopelessly among the idiots and insane. We know how recently they have been elevated to the rank of civilized human beings. We see the injustice of former times, but alas! we are too often blind to that of our own. We recognize at once that deaf-mutes can be taught to think without speech, but alas! how few are they who believe that they can be taught to speak without hearing. People outside of the profession look with incredulity at deaf-mutes, and wonder that they can be taught to think in written words as we think in speech. When deaf-mutes are taught to speak as well as to think, people look upon it as a kind of miracle. The results that are now looked upon with so much wonder, will ere long become every-day facts, and future generations will look back with surprise to the time when civilized nations could allow children that were merely deaf, to grow up with undeveloped minds, and dumb....

"Deaf children are delighted to see their own noises represented upon the blackboard. It encourages them to make new attempts to vary upon the original sounds. The children emulate each other to see who will produce the greatest variety of noises. They describe the symbols for all these sounds by the means of signs. In process of time they discover that these signs are really descriptive of the physiological actions that accompany the sounds. They are thus led to observe the movements that occur in the larynx, pharynx, or back parts of the mouth, while they are uttering their noises. In this way they are taught to recognize and to control the movements of organs concealed from direct observations. When this stage has been reached, the teacher, instead of following the lead of the pupil, turns round and requires the pupil to follow his guidance. He leads him, by the analogies of the symbols, from his own animal noises to the articulation of English sounds. Every stage of the process is pleasant to the child. He is not discouraged by disheartening repetitions. The process may seem slow and round-about but it is *sure.*"

On the following day, during the discussion of a paper on the "Physiological Peculiarities of Deafness" by Dr. George Wing, Graham Bell mentioned "certain experiments he had made upon the development of the sense of hearing of the semi-deaf. He had been surprised on visiting institutions for deaf-mutes to find that the semi-deaf had been left without artificial aids to hearing. Instruments of all sizes and shapes were to be had, from the artificial membrane itself up to the hearing trumpet shown by Dr. Wing." Yet Graham Bell felt that he was right in saying that even in articulation schools no use had been made of hearing trumpets until he suggested it.

Then Graham Bell described the excellent results he secured in educating the power of hearing through the instrumentality of a hearing-tube, and cited a number of cases where persons possessed of a sufficient amount of hearing to be more properly designated "hard of hearing" than deaf, had been allowed to grow to manhood or womanhood as deaf-mutes. One case was that of a young man educated as a deaf-mute, taught by means of the sign-language, married to a deaf-mute, and mingling with deaf-mutes. Yet, in a short time, under Graham Bell's care, this young man was able to "hear and understand words and sentences when spoken in a low tone of voice about six inches from his ear." Graham Bell was "surprised to find how many so-called congenital deaf-mutes had partial hearing. He believed that a large number of them could be taught to articulate without any other artificial means than a hearing-tube. It was difficult to ascertain the extent of hearing possessed by a deaf-mute. He had seen persons utter words and sentences to deaf-mutes through the hearing trumpet. The pupil would shake his head and be unable to imitate anything; so the experimenter would declare, 'It is plain *that* boy has no hearing.' Now, such a test as that was no test at all. He thought it would puzzle many of those present, possessing the faculty of hearing in perfection, to imitate the pronunciation of a Chinaman or a Dutchman—at least at the first attempt. It would certainly be very hard if he attributed their inability to deafness! But spoken language was just as foreign to the ears of a deaf child as Chinese or Dutch was to theirs."

In 1884, Dr. Bell was asked if he still advocated "the use of his physiological symbols in teaching the deaf to speak?" He replied: "Certainly I do. I advocate a greater use of them, and I advocate even simplifying and making the characters so simple that even the *youngest* child can use them and that teachers can use them with greater facility. I actually advocate a shorthand form of Visible Speech, called by my father Line Writing, because you can use it with such rapidity. The great objection to ordinary symbols is that we use in our schools the printed form of the letters. We have several forms of alphabets; we have printed characters, we have script characters. Now if you are communicating with a person by writing, if you are obliged to communicate by capital letters, it will be a pretty slow and difficult thing, and so in using my father's physiological symbols. I am proposing a greater use of them than has ever been made, and using the shorthand form of the character so that we may write with the speed of speech more nearly than with the speed of printing.... I have considered the advisability of using the line-writing as my father gave it, and the advisability of joining the letters together in the latter part of his work; but I came to the conclusion that it was better to separate the letters, so that the same letter should always come in the same relative position. In shorthand writing you go up and down from the line, and the same letter may stand for two words, and although it is very much more rapid when the letters are joined together, it is simpler and clearer, I think, to write them separately. It makes a clearer picture, and the writing is more rapid than anything else excepting shorthand itself."

CHAPTER XXII.

VISUALIZING VIBRATIONS OF SPEECH.

On Saturday, June 13, 1874, a second convention of articulation teachers was held in the Walnut street school-house, Worcester, as noted in the preceding chapter. Several important papers on the subjects of articulation and of lip-reading were read. Then Graham Bell described the method of investigating the mechanism of speech invented by Mr. Oakley Coles, of England, and followed with an exhibition of visualizing vibrations of speech with the aid of Koenig's manometric capsule and Morey's improvement of Scott's phonautograph. It will be recalled that when Dr. Bell first met Miss Fuller, he was rather skeptical that deaf-mutes could be taught to read speech. But this skepticism was soon dissipated by the admirable examples constantly before him in Miss Fuller's school. Yet it proved beneficial in leading him to devise a number of instruments in the effort to invent one that would enable deaf children to read speech from graphic presentations of the inflections and modulations of the speaker's words. For then he believed that these illustrations might prove more serviceable than the simple and natural method of watching the movements of the lips and the vocal organs. His first aim was to invent an instrument of serviceable dimensions that should visualize the vibrations of the air set in motion by the spoken word. Following Koenig's method in producing manometric flames, Graham Bell used a membranous diaphragm to divide an oval container into two compartments. Into one he fitted a gas tube, while the other served as a mouth-piece. Igniting the freely-flowing gas produced a narrow needle-like flame. In a sense the flow of gas was controlled by the vibrations of the membrane after the same fashion that the metal diaphragm in the transmitter of the telephone now accelerates the flow of battery current through pressure on the carbon granules. Thus every sound impinging on the membrane caused a corresponding fluctuation in the length and the shape of the gas-flame. Then, by the aid of a set of rotating mirrors, these changing flame-shapes were reflected in ribbon-like, serrated-edged wave-forms that are best described as visualized vowel-sounds. In other words, these fleeting reflections were similar in character to the tracings now recorded on the wax cylinder of the modern phonograph, or its early prototype, the cylinder of paper coated with lamp-black so familiar to experimenters with the phonautograph devised by Leon Scott, in 1855.

But though he succeeded in disassociating and reflecting in a mirror the elemental components of sound-waves, Graham Bell realized that these shadow-graphs were of too evanescent a character to prove serviceable in ordinary conversation; and to procure permanent shadow-pictures by photographic or other process, would prove expensive. So his next step was to find a method by which a permanent record could be economically obtained. At the Massachusetts Institute of Technology he found an improved form of Scott's phonautograph made by one of the students, a Mr. Charles A. Morey, having a long wooden stylus that afforded enlarged tracings of each movement of the diaphragm, tracings that could be preserved for study and comparison.

Graham Bell had made a thorough anatomical study of the marvelous mechanism of the human ear and was familiar with its many functions. He knew that the external ear serves not only as an ornamental appendage but as a collector or deflector of sound, which, passing through the tubular entrance-way, impinges on the delicate membrane called the drumhead, or drumskin, which separates the external from the internal ear; that this middle apartment contains the ossicles of hearing, the chain of three small movable bones separately known as the malleus or hammer, the incus or anvil, and the stapes or stirrup, which relay and convey the vibrations of the drumhead to the internal ear, the true seat of sound sensation and separation; that this inner apartment contains Corti's organ of ten thousand strings, which receive sounds through the filaments of the auditory nerve fibres, and there untangles, translates and distributes in harmonic order every variation in tone that the human ear can distinguish. (Dr. Hewson, in referring to Corti's organ, has stated: "We have here what might be called a musical instrument, which is designed, not to produce sounds, but to render them perceptible, and which is similiar in construction to artificial musical instruments, but which far surpasses them in delicacy, as well as in the simplicity of its execution. Hence it is that the organ of Corti has been likened to the keys of a piano; but while in a piano every string must have a separate hammer, by means of which certain sound is produced, the ear possesses a single hammer of an ingenious form in its ear bones, which can make every string of the organ of Corti sound separately. There are three thousand rods of Corti in the human ear. This would give about four hundred to each of the seven octaves which the human ear can appreciate. Thus we have about thirty-two for each semi-tone. According to Weber, an accomplished musician can appreciate the one-sixty-fourth of a tone.")

Thus it came about that while Graham Bell was watching the wooden stylus trace the curves that correspond to the vocal sounds he caused to impinge upon the diaphragm of Morey's phonautograph, he was impressed with the similarity of action between the movements of the stylus when actuated by the vibratory diaphragm and the motions of the small bones of the ear when the drumhead is set in motion by the impact of sound-waves. And this led him to wonder whether a modified form of phonautograph modeled upon the mechanism of the human ear, would yield more desirable results. With this thought in mind, he consulted with Dr. Clarence J. Blake, an eminent aurist in Boston, professor of otology in Harvard University, and aural surgeon to the Massachusetts Eye and Ear Infirmary, who suggested that in place of an imitation ear, it would be far more satisfactory to use the human ear itself. This novel idea favorably impressed Graham Bell, and, at his request, Dr. Blake secured and prepared an excellent specimen which was made joint use of in carrying on their respective investigations, so closely allied, during the spring and summer of 1874.

The ear secured by Dr. Blake was suitably prepared and mounted on the arm of a stand supporting the mechanism to automatically move a plate of glass in a given direction and at a given speed, while a cylinder or receiver was placed to convey the sound of the voice directly into the ear. One bone in the ear, the stapes, had been removed; then to the incus was glued a selected fibre of wheat straw which extended downward nearly an inch, barely touching the smoked surface of the glass plate;while the necessary mobility of the drumhead and the small bones was obtained by moistening with a mixture of glycerine and water. Then, when Graham Bell sang or talked, laughed or shouted into the receiver, the drumhead of that prepared ear would take up all the vibrations of the voice, as well as all their differentiating characteristics, and pass them on to the stylus which, in turn, accurately copied or recorded them on the sooty surface of the glass in the form of exquisite tracings. Of the many different sounds that were uttered, each had its own distinguishing characteristics accurately recorded, thus indicating that the particular air particle which produced each given sound performed its mission in a manner peculiar only to that individual sound and in no way common to other sounds.

The records of the Essex Institute of Salem, Massachusetts, show that at the regular meeting, held on Monday, January 18, 1875, Graham Bell "occupied the evening with a singularly interesting and curiously instructive address on the subject of speech, with illustrative experiments of various kinds." With the aid of a camera operated by Rev. E. C. Bolles, Graham Bell exhibited for the first time to a public audience, a large number of tracings he and Dr. Clarence J. Blake had secured in visualizing vibrations of speech. The record reads: "He averred that each note was not a single tone, as it appears to be, but a composite of several, including the fundamental, or loudest, with the addition of overtones and undertones; there was no such thing as a tone pure and simple. He explained the pitch, the quality, *timbre*, and resonance of tones, and showed how they were produced; that ripples are produced in the air by different sounds, each sound causing a combination of wavelets the curves of which can be made visible to the eye and many of which are of exceeding beauty. These were exhibited to the audience by means of a gas jet, whose vibrations were reflected in a mirror."

These beautiful transcriptions of human speech, while rich in scientific interest, proved of no direct value for the purpose designed, that is, to aid deaf children in reading speech. But indirectly they proved of great value to the deaf. For, as Graham Bell said: "It was by the study of the shapes and forms of these vibrations that I was led by the different steps to the invention of the telephone." And it was this latter experiment that did lead directly to the invention of the telephone. And later on, deaf children were benefited through having several hundred thousands of dollars received from that invention expended in promoting their welfare; the deaf were also benefited in securing the life-services of Graham Bell.

For, while he was studying these beautiful records, and perceiving how easily the drumhead of the ear received and transmitted these voice-vibrations, numberless in variety and characteristics, Graham Bell was forcibly impressed, as he has related, "with the remarkable disproportion in weight between the membrane and the bones that were vibrated by it." Thus he thought, "that if a membrane as thin as tissue paper could control the vibrations of bones that were, compared to it, of immense size and weight, why should not a larger and thicker membrane be able to vibrate a piece of iron in front of an electromagnet, in which case the complication of steel rods shown in my earlier form of telephone could be done away with, and a simple piece of iron attached to a membrane be placed at either end of the telegraph circuit."

Graham Bell rapidly perfected this theory and in October, 1874, explained these views to Dr. Blake at his office in the Hotel Berkeley as well as his belief that "by means of this arrangement undulations should be produced in an electric current corresponding to the undulations of the air produced by the human voice," and prepared sketches to illustrate his explanation of what Dr. Blake called this "absorbing idea of the transmission of human speech." Fortunately these sketches were preserved by Dr. Blake.

Early in 1874, while attending a course of public lectures on acoustics given by Dr. Charles R. Cross, professor of physics in the Massachusetts Institute of Technology, Graham Bell formed an acquaintance with Professor Cross. In the autumn of 1874, Graham Bell showed certain of his experiments to Dr. Cross and explained to him his conception of the feasibility of the transmission of speech. There was a portion of a Reis telephone in the Institute which was shown to Graham Bell, but he explained how he proposed to use a continuous and not a make-and-break current. As soon as Dr. Cross understood that the plan was to transmit speech by varying the current strength or flow by the power of the human voice, he preceived that this "undulating current method was theoretically perfect, and, therefore, in theory adequate to the transmission of speech." Yet he then believed that the electrical effect produced by the vibration of a diaphragm-armature actuated only by the human voice "would be entirely too small to accomplish the desired end." In October, 1874, Graham Bell also described this proposed method of speech transmission to Mr. Hubbard, Mr. Sanders, Moses G. Farmer, Professor Lovering, and others. Mr. George A. Hamilton, Mr. Farmer's assistant, in referring in 1905 to this period, wrote: "At this time, too, Graham Bell began his preliminary experiments, which later gave us the speaking-telephone. I was an enthusiastic participant in some of these, and recall with interest now the fatherly caution then received, not to allow myself to be unduly carried away by some of his theories."

On November 26, 1874, Graham Bell wrote: "Mr. Blake (father of Dr. Clarence J. Blake) having kindly offered me the use of a room in his building, No. 77 Kilby Street, Boston, I, this morning, proceeded to set up there the apparatus constructed for me by Mr. Hamilton."

Incidentally it is worthy of note that in these experiments Graham Bell accomplished all that the editor of the *Detroit Post* anticipated in 1870, when he wrote: "If human ingenuity ever hits upon a device for taking instantaneous pictures of sound we may expect some curious results. Instead of verbal descriptions, which flattery and malice too often make untrustworthy, we shall have operatic pictures in which the quality of every tone will be indicated as accurately as though it had been measured with a tape line."

CHAPTER XXIV.

Evolving the Theory of Speech Transmission.

During the year 1871-1873, Graham Bell had devoted much of his spare time "to practical experiments relating to the production of sound by electrical means, with the object of reducing to practice his system of harmonic telegraphy." These experiments could only be carried on at night, and often late at night, for every moment from morn till eve was fully occupied with professional work, teaching, examinations, lectures, etc. During this period he devised several forms of telegraphic apparatus, and completed a telegraph system in which two or more current interruptors and harmonic receivers were connected on a single circuit. When sending a message, by depressing the key at the transmitter the current would cause the corresponding reed at the receiving end to reproduce the given musical tone, all the other reeds remaining silent. To aid him in making these experiments he strung a telegraph wire from his residence to the house of his friend, D. P. Richards, who resided across the street.

These many experiments relating to sound transmission were all more or less serviceable in broadening his knowledge of that branch of electricity. But from the sending of many signals over one wire at the same time by a make-and-break circuit, the electric-speaking telephone would never have been evolved, though these experiments had been continued along the same line for a life-time; for conversation cannot be transmitted on an interrupted, or make-and-break, circuit. For the intelligible transmission of speech the current must be continuous, yet vary in strength or flow as varies the force of the sound waves impinging on the diaphragm of the transmitter; otherwise the diaphragm in the receiver will not be under the constant control of the speaker; unless under the constant control it cannot copy or reproduce the movements of the diaphram in the transmitter. And only through a substantial reproduction in the receiver of the movements in the transmitter is intelligible conversation secured. These facts are now well-known: but they were first conceived by Alexander Graham Bell, and first promulgated by him, as will be shown later on. Now we are interested in showing how at first he was simply following the same delusive idea that Bourseul turned loose in 1854, that an interrupted current would convey speech, a fallacy that misled Reis. As Judge Lowell so explicitly said of the Reis telephone: "The regret of all its admirers was that articulate speech could not be sent and received by it. The deficiency was inherent in the principle of the machine. A century of Reis would never have produced a speaking telephone by mere improvement in construction."

In May, 1873, a serious illness, brought on by overwork and too close application to his experiments, compelled Graham Bell to drop everything and return to his father's home, where he remained until October of that year. Then he returned to Boston and again plunged into both his professional work and his fascinating electrical experiments, and so continued during the next fifteen months.

Throughout the year 1874, Graham Bell found every moment of time more fully occupied than ever before. The inestimable value of Visible Speech in educating the deaf was generally recognized; his lectures upon vocal physiology at the Boston University were largely attended, and were carefully prepared; his classes composed exclusively of the teachers sent by the various institutions to receive instruction upon the subject of teaching articulation to deaf pupils, had increased in size, as had also his classes composed of persons, mostly young women, who were desirous of qualifying themselves to become teachers of articulation in schools for the deaf. Then his lectures on articulation were supplemented by experimental demonstrations with individual deaf pupils, while his lectures on vocal physiology were enriched by practical illustrations of the wiser method of correcting stammering, stuttering, lisping, burring, and other defects in speech, as shown in the cases of private pupils placed in his care. Then, in addition to all these professional duties, Graham

Bell had undertaken the general education of a deaf-mute boy, as an interesting experiment.

The experiment with the boy G. S., is worthy of special mention. He came to Graham Bell in October, 1872, when five years of age; was born totally deaf, had never spoken a word, had never been to school, but had received private instruction for three weeks from Miss Sarah Fuller. He remained under Graham Bell's tuition for nearly three years, and acquired "a vernacular knowledge of the English language in its spoken and written forms." Ten years later the "remarkable command of language possessed by this boy" was publicly commented on, as well as the fact that "he used the English language with a freedom and an accuracy quite exceptional in a deaf-mute,"although, "for several years past he had had no teacher." In teaching the child Graham Bell held that "we should talk to the deaf child just as we do to the hearing one, with the exception that our words are to be addressed to his eye instead of his ear," and claimed that George Dalgarno (1680) "carries his theory so far as to assert that the deaf infant would as soon come to understand written language as a hearing child does speech, 'had the mother or nurse but as nimble a hand as commonly they have a tongue'." And he proceeded "to blend the principles of Dalgarno with those of Froebel" and familiarized "the child with written language" by giving language lessons "through the instrumentality of toys and games" in a school room converted into a play room.

In view of the extent of Graham Bell's professional labors, it will be easily understood that in the autumn and winter of 1874, his time was completely occupied from morning till night, and that any experiments and researches in multiple-telegraphy, or in his "all-absorbing idea of speech transmission" were necessarily carried on when other people were in bed. It will also be understood that his profession was his only support and that it yielded a fairly good income.

Not only were his experiments conducted late at night, but he was compelled to construct his instruments with his own hands as he was afraid to employ an electrician or mechanician until the invention was properly secured by letters-patent, or otherwise. Then he was not a skilled electrician, and did not carry on his "experiments in the same manner they might have been carried on by one more familiar with electrical subjects." Thus many of his experiments were in the nature of research for the sake of information.

Notwithstanding this physical and mental strain, there entered into Graham Bell's life that rare and inexpressible pleasure ever the accompaniment of unselfish labor of love. He found a joy in striving to benefit helpless humanity. If his telegraph and telephone inventions proved to be all that he expected, "we shall have Visible Speech put before the world in a more permanent form," he wrote to his parents. And all through these years of toil and trial, under discouraging conditions, the one thought that appears to have dwelt uppermost in his mind was that the success of his inventions would afford greater opportunities for the exercise of helpfulness to humanity. If wealth came it would not be used in securing selfish pleasure, nor in idleness, for he could not live a life of ease, he would not be a Toledo blade and remain sheathed in a rusting scabbard. His letters to parents and friends are permeated with this desire to help the helpless. Writing to his parents at midnight on October 20, 1874, while on the train running from Boston to Salem, he wrote:

"I am tonight a happy man. Success seems to meet me on every hand. First, pupils pour in.... Second, the medical society has evinced great interest in the ear experiments. Several physicians express the belief that certain vexed questions concerning the mode in which the vibrations of sound are transmitted from the tympanic membrane to the inner ear can be settled, and I was requested to repeat the experiments (see Chapter XXII) upon a fresh specimen using an organ pipe as a generator of sound and affixing the stylus to various portions of the ear that they designated.... I am hard at work on a lecture to be delivered in the Institute of Technology next Wednesday. Subject: 'The Education of the Deaf.' This is to be a free public lecture, and it will be illustrated by an exhibition of pupils of the Boston school. The intention is to excite an interest in the public mind, and having got a large audience together by the prospect of hearing deaf-mutes talk, to call for subscriptions to be devoted to the immediate opening of an evening school for adults."

Then he told of having taken the oath of intention to become an American citizen and of preparing the papers covering his multiple telegraph, and added: "Should I be able to make any money out of the idea, we shall have Visible Speech put before the world in a more permanent form than at present."

CHAPTER XXV.

EXPLAINS HIS TELEPHONE THEORY TO PROFESSOR HENRY.

Late in February, 1875, Graham Bell was called to Washington by his patent attorneys on business concerning the harmonic telegraph system he had invented and for which letters-patent had been applied. In this application which was filed in the patent office February 25, 1875, he "described two ways of producing an intermittent current—the one by actual make-and-break of contact, the other by alternately increasing and diminishing the intensity of the current without actually breaking the circuit," which he called a pulsatory current.

Before going to Washington he secured a letter of introduction to Prof. Joseph Henry, then secretary of the Smithsonian Institution. Henry had prepared the way for the telegraph which Morse had perfected and was the foremost scientist in America. In later years, Sir William Thomson said: "Joseph Henry and Faraday were patterns of scientific investigators. In some degree they went parallel and made similar scientific discoveries. Henry, indeed, preceded Faraday in the great discovery of the electro-magnetic induction between unmoved conductors. Henry gave the warmest welcome to all practical applications of his discoveries. He sought to make none himself, not because he superciliously despised the application of science to the public good, but because his own convictions constrained him to go on in pure science."

Graham Bell understood that certain features which he had worked out in telegraphy had previously been discovered by Henry. So he called and explained some of the difficulties he was laboring under in perfecting his telegraphic system. Henry listened with evident interest, and when certain experiments had been described, he asked to be allowed to repeat the experiments and to publish them to the world through the Smithsonian Institution, of course giving all the credit of the discovery to Graham Bell. This request was granted, and an offer made to show the apparatus and experiments. Then Professor Henry, though aged, and suffering from a cold, insisted on going at once to see the apparatus, which was temporarily at Mr. Hubbard's home in Washington. He put on his coat and was about to order his carriage, when Graham Bell "offered to save him the trouble of going out on such a raw, damp day, by bringing the apparatus to the Smithsonian Institution." Professor Henry accepted the offer and "appointed noon of the next day for the experiment."

When the apparatus was shown and the experiments made on the following day, Henry's intelligent interest and practical suggestions assisted Graham Bell to solve the difficulties he was laboring with in his harmonic system, and so won his heart that he was led to explain all his hopes and plans "for the transmission of the human voice by telegraph," to describe the apparatus he proposed making and to detail all his many experiments.

Pofessor Henry had a Reis telephone which he had purchased from Koenig, of Paris. He had experimented with it and knew that it was a form of philosophical apparatus designed to reproduce the musical pitch but not the quality of sound; that Reis designed the machine in the hope that it would accomplish in transmitting speech, all that Bourseul had suggested in 1854, an abstract of Bourseul's letter having appeared in a local magazine published in the city where Reis lived; that during the ten years these instruments had been on the market, they were not sold and purchased as speech-transmitting telephones, but as ingenious circuit-breaking devices employing several cells of battery and a broken current of unvarying strength, and were advertised only as "intended to transmit sounds to a distance by means of electricity."

While they were experimenting with the Reis telephone, Graham Bell explained that he was familiar with the mechanism of the receiving portion of the instrument, as there was one in the Institute of Technology, in Boston; that he had never before seen the transmitting portion of the apparatus, yet he had gained a knowledge from diagrams and descriptions of the instrument and its mode of operation. Then he explained to Professor Henry how widely different from Reis's work were the lines along which he was groping; how his experiments with the human ear had so strongly impressed him with the belief that by attaching a bit of iron to a membrane and properly vibrating it before an electromagnet with the human voice, an electrical current of varying strength would be set up in a wire: and how he had learned from Helmholtz that tones of different qualities required different forms of vibrations, if perfect reproduction was attained. He explained that he had no thought of devising any form of circuit-breaking instrument, but did hope to invent a self-contained magneto-generator that could be operated by the spoken word. If constructed according to his theory, the strength or flow of the current in this telephone would vary as varied the aerial impulses impinging upon the diaphragm of the transmitter, thus reproducing in the receiver each word spoken in the transmitter.

In Graham Bell's own words he "had deduced from the known laws of magneto-electricity that the vibrations in the electrical current induced by the to-and-fro movement of a magnet, or of inductive material, would correspond to the motions themselves; so that if the changes in the current were graphically shown, they would be respresented by a curve substantially similiar to the curve that would represent the motion of the inducing body.... If these to-and-fro movements were made to follow each other with sufficient rapidity to bring their vibrations within the limits of sound vibrations, the effect referred to would still follow, namely: that the undulatory or vibratory current would correspond in character to the character of the vibration that caused it and hence to the character of the aerial motions produced by that vibration. That is, that the variation in the current would not only correspond in frequency to the rapidity of the sonorous vibrations, but would also correspond to those minor details of the vibration that determine what we call the character or the quality of the sound produced."

Professor Henry was not only an eminent scientist, but was the leading electrician in America, and was broadminded enough to instantly perceive how great a conception was being unfolded before him. He knew that no one had ever before suggested the possibility of an undulating current having the capacity to reproduce speech in all its variations in tone; that this young man was in no sense following in the footprints of earlier workers, but boldly blazing his own pathway in an unexplored field of science, that the essential step towards success had been taken in the intellectual "conception of a new principle and mode of operation, of a new relation of means to an end," and that all that was required to develop this magnificent theory into a brilliant realization was sufficient electrical knowledge and the requisite mechanical skill.

Then Graham Bell put the question squarely to Professor Henry: "What would you advise me to do; publish it and let others work it out, or attempt to solve the problem myself?" Professor Henry replied that he believed the plan embodied the germ of a great invention, and advised him to work at it instead of publishing his theory. Graham Bell then explained that he felt that he did not possess "the electrical knowledge necessary to overcome the difficulties." Henry's reply was: "*Get it!*"

In writing to his father and mother about this visit, of Professor Henry's wise and generous counsel, and of his encouragement to get the necessary electrical knowledge, Graham Bell wrote: "I cannot tell you how much these two words have encouraged me. I live too much in an atmosphere of discouragement for scientific pursuits. . . . Such a chimerical idea as telegraphing *vocal sounds* would, indeed, to *most minds*, seem scarcely feasible enough to spend time in working over. I believe, however, that it is feasible, and that I have got the clue to the solution of the problem." Again he stated: "The appreciation of Professor Henry acted as a stimulus to the development of the speaking-telephone. In spite of my efforts to concentrate my thoughts upon multiple telegraphy, as Mr. Sanders and Mr. Hubbard wished me to do, my mind was full of it. All that I read upon electrical subjects seemed to be viewed from the standpoint of the speaking-telephone."

Thus, early in 1875, and a year before he applied for a patent, Alexander Graham Bell's conception of the electric speaking telephone was theoretically perfect, and in every way adequate to the transmission of speech. But mechanically and electrically it did not exist until the summer of 1875. First, owing to the state of the art at that period. For prior to the issuance of the

Bell patent there was nothing on record to justify electricians in assuming that sound waves in themselves would possess force sufficient to generate the necessary current to properly actuate a receiver at the distant end of a wire. Nor did electricians then understand that telephone messages could be transmitted with an expenditure of less than one hundred millioneth part of the current required to telegraph a message, or that a telephone diaphragm takes only about a thousandth part of a second, to attain its full movement. Second, owing to lack of funds. Third, because in the previous autumn, he had agreed to devote all his spare time to developing the autograph system of telegraphy for which he had obtained letters-patent. His partners believed that would prove more immediately valuable than any other of his inventions, and could perceive no commercial value in a telephone, "a mere scientific toy" that no one would have any use for.

Incidentally it may be added that in 1874, there were 175,735 miles of Western Union land wires, over which it was then the practice to send one message at a time, at the rate of from 20 to 40 words per minute by the Morse manual method, and 50 words per minute by the Phelps printer. In 1872 the Stearns duplex assumed a practical form, but it was not introduced until after 1874, and then came the quadruplex.

In the summer of 1874, Mr. Thomas Sanders, of Haverhill, Massachusetts, offered to assist Graham Bell in obtaining patents for his telegraphic inventions. Graham Bell has stated that "it was decided to file a caveat, and for this purpose we employed Mr. Joseph H. Adams, of Boston, as our solicitor. A few days after placing the matter in Mr. Adams' hands, Mr. Gardiner G. Hubbard, of Cambridge, not knowing of my negotiations with Mr. Sanders offered to enter into a similiar arrangement with me. The result was that Messrs. Sanders and Hubbard both became interested in my telegraphic inventions."

Later, Graham Bell said: "My understanding always was that the speaking-telephone was included in the inventions that belonged to the Messrs. Hubbard and Sanders from the autumn of 1874, but I found at a later period that they had not had this idea, which might account for the little encouragement I received to spend time on experiments relating to it. Even as late as

1876 when the telephone was an assured success Mr. Hubbard generously offered to relinquish to me all right and title to that invention, as he was inclined to think it was outside our original understanding."

Mr. Hubbard's account of the manner in which he became interested in Graham Bell's inventions, is thus described: "In August or September, 1874, Mr. Bell was playing on the piano at my house and suddenly stopped and asked me if I knew that in singing into the piano the proper note would respond, that is, if he sang the note 'do,' *do* would respond from the piano. That if two pianos in different places were connected by a wire, and the key of one was played upon, both being connected in a telegraphic circuit, the other would respond. I then asked him what value there was to that fact. He replied that by means of it telegraphic communications could be carried on between two places to much greater advantage than by the Morse instruments. This conversation resulted in an arrangement with him and Mr. Thomas Sanders, who was then associated with him, by which I became one-third owner in Mr. Bell's telegraphic inventions.... I always said that under our agreement we could not claim Mr. Bell's inventions for the transmission of speech. Mr. Sanders took a different view; Mr. Bell agreed with me in opinion. Finally we referred the question to Mr. Pollock, our attorney. He thought that considering all the circumstances, as we had advanced all the funds which led to the invention, it should be given to us even if not included strictly in the terms of the agreement. .... During the summer and autumn of 1875, Mr. Bell's mind seemed to me to be occupied with the electrical transmission of speech a great deal more than was to my pecuniary advantage, as I did not then believe the transmission of speech could ever be made commercially valuable, and I at several times remonstrated with him for spending so much time upon the subject.... I wanted him to spend his time upon instruments that would transmit many musical notes simultaneously, or upon an autograph telegraph upon which he was working, as I believed such instruments would be of more pecuniary value than any instrument for transmitting speech."

Leaving Washington, after his visit with Professor Henry, Graham Bell stopped in New York and explained his harmonic multiple telegraphic system to President Orton and Electrician Prescott of the Western Union. They invited him to bring his apparatus to New York and show what it could do on a commercial circuit. Accepting this invitation he returned to Boston, secured his instruments, and was in New York the following Monday. A few days later Graham Bell, in a letter to his father and mother, wrote: "Mr. Orton and Mr. Prescott both devoted a large portion of their time in discussing with me the whole plan from its theoretical point of view. Mr. Smith, the manager of the experimental room, was absent from town, but was telegraphed for. He replied that he could not come till next morning. Tuesday forenoon we had batteries connected and I tuned up my instruments. They went like clock work. I have come to the conclusion that by a happy chance they are much more perfect than I thought at first. The signals are as clear, sharp and rapid as with the ordinary Morse sounder. I connected two transmitters and two receivers on only one line and two messages were sent simultaneously. We had 100 cells of a battery, and all went well on our artificial circuit. Mr. Prescott then said he would like to see them tried on a real line wire. He telegraphed to Philadelphia to have two wires crossed there so as to give us (practically) a continuous wire from New York to Philadelphia and back. The electro-magnets I employed were not intended for trial on a long line. They were wound with coarse wire and the resistance was only 3 ohms. Ordinary electro-magnets for actual service on a line have a resistance of about 200 to 600 ohms. None of us, therefore, expected the instruments to work without stronger magnets. But they *did work.* The signals, though feeble, came sharply and concisely through the 200 miles of line wire!!! I suggested trying stronger magnets, so Mr. Prescott ordered the instruments to be taken to the workshop and stronger magnets placed on them."

Later Graham Bell stated that on the following day he desired to take the apparatus to the president of the Atlantic & Pacific Telegraph Company. But after a long conference between Mr. Orton and Mr. Prescott, he was prevailed upon to leave them with the Western Union.

CHAPTER XXVI.

TRANSFORMING THE TELEPHONE THEORY INTO TANGIBILITY.

From his visits to Professor Henry and Mr. Orton, Graham Bell returned elated in spirit, but "thoroughly worn out physically," and was "beginning to realize the cares and anxieties of being an inventor." His partners were urging him to complete both telegraph systems as rapidly as possible, and in the effort to comply with their wishes and yet keep his professional work up, the mental and the physical strain became unbearable. So he decided "to give up all professional work for some weeks." Thus he turned his private pupils and his classes over to others, on the supposition that he would be prepared to take them again in a month. But several months passed before he again fully entered upon his educational work, and only then because he had exhausted his own funds and had spent all the money he cared to borrow from friends.

On March 18, 1875, he wrote, in explanation of this step: "Flesh and blood could not stand much longer such a strain as I have had upon me. Professional work is all in confusion; and the only way is to cut the Gordian knot and throw up everything until the end is achieved." Later he wrote: "I put off all my pupils and classes from the early part of March until the 12th of April. It is hardly necessary to state that by that time my professional work had become thoroughly disorganized, and that I began to be in real want. Still, the emoluments derived from my connection with the Boston Universty and the fees received from a few private pupils, gave me a small income which enabled me, by severe economy, to get along. Towards the end of May or the commencement of June, however, I began to feel that a change of some kind was imperatively necessary. My profession was gradually dwindling away, and but for the kindness of my colleague, the late Prof. Lewis B. Monroe, in advancing to me sums of money that would in the future become due to me from my lectures in the Boston University, I would not have been able to get along at all. My pecuniary condition was not known or fully understood by Mr. Sanders and Mr. Hubbard. They had agreed to pay the expenses of my experiments; but no arrangement had been made to remunerate me for my time. On account of the peculiar relations then beginning to arise between myself and Mr. Hubbard, I was unwilling that he should know of the condition in which I was placed, and could not bear the idea of asking him to modify the arrangement that had been entered into, so as to contribute any money to my support. The peculiar relations to which I refer will be understood when I say that Mr. Hubbard's daughter is now my wife...."

March 6, 1875, Graham Bell filed his application for an autographic system of telegraphy, in which receivers tuned to a definite pitch vibrated in unison with the succession of electric impulses sent out from their respective transmitters, and thus controlled the action of a recording lever operating on an ink-ribbon, so that "an exact copy of any message, picture, or other object impressed or written upon the metallic foil can be transmitted to and obtained at the receiving end."

May 24, 1875, Graham Bell wrote to his father and mother: "I am so immersed in telegraphy and science that I find it impossible to write freely about anything else, but I feel that at the present time you can scarcely be inclined to listen to anything I have to say on such subjects. Since I gave up professional work and devoted myself exclusively to telegraphy, I have been steadily gaining health and strength.... The autograph arrangement is rapidly approaching completion. Already I can copy handwriting quite legibly, though not yet neatly. The rate of transmission by means of my instruments will be exactly ten times more rapid than 'Bakewell's autograph telegraph,' in which the rate is 300 letters per minute.... Every moment of my time is devoted to the study of electricity and to experiments. The subject broadens. I think that the transmission of the human voice is much more nearly at hand than I had supposed. However, this is kept in the background just now, as every effort is to be made to complete the autograph arrangement, so as to have it used on some line.... I fear that this telegraphic business may force me to remain the greater portion of the summer here, but I cannot tell yet, so many details have to be worked out. My inexperience in such matters is a great drawback. However, Morse conquered his electrical difficulties although he was only a painter, and I don't intend to give in either till all is completed."

In this autograph telegraph system he utilized his multiple telegraph apparatus for the purpose of reproducing in distant places a *fac simile* of a picture or a handwriting, so that written messages could be transmitted. In his own words: "The vibrations of the tuned reed receivers of my multiple telegraph apparatus were used to make or break a local circuit through the instrumentality of what I have termed 'vibratory circuit breakers,' and so cause marks to be recorded on paper or other material."

On June 2, 1875, he wrote to Mr. Hubbard: "I have accidentally made a discovery of the very greatest importance in regard to the transmitting instruments.... I have succeeded today in transmitting signals *without any battery whatever!* The musical note produced at the receiving end was sensibly the equivalent of that at the transmitting end in loudness as well as pitch."

This important discovery in transmitting telegraphic signals was perceived while making an experiment to ascertain whether the receiving reeds in his autograph system "were properly tuned to their corresponding interrupters." There were three experimental stations upon a single line wire, and when plucking the reed at one transmitter, its peculiar tone and *timbre* was reproduced at the required receiving station, although no current was on the line. Graham Bell reasoned that this action was probably due to the residual magnetism in the coils, after the heavy battery currents had been cut off, and it solved the one great difficulty in regard to the practical operation of the various instruments he had devised for the reproduction of speech.

As he says, it was purely an accidental discovery. But so was that apple which is said to have fallen from the tree under which young Newton was resting. The fact that the musical note produced was the same as the note transmitted might easily have escaped the attention of many an earnest worker. And here is where the true genius of the man is exalted in the history of the invention of the telephone. For had Graham Bell not instantly perceived the almost imperceptible response to his accidental touch, and accurately reasoned the cause, months and even years of additional labor might have been necessary before the problem of speech transmission would have been accurately solved. But his trained faculties enabled him to work out in his mind by a process of pure scientific reasoning the cause that wrought the effect, to perceive its value when applied to his telephone experiments, and then to devise a method and a means by which similar results could be obtained in the transmission of speech. Incidentally, it was also an excellent illustration of the important part that incidents slight and insignificant in themselves often play in great achievements.

The words telephone and microphone were used half a century before Graham Bell began his experiments, and their coinage is credited to Wheatstone. Thus there were sound telephones and steam telephones and musical telephones long before 1876. In Germany the speaking tube was sometimes called 'the telephone.' But not until Graham Bell showed the world how to transmit speech electrically was there an electric-speaking telephone.

Graham Bell had previously designed harmonic telephones for use in his multiple system of telegraphy, that is, telephones for the transmission of musical notes, and he had designated them as telephones in his application for a patent. But as a result of this accidental discovery, he now set about making the first of the electric-speaking telephones, and completed this crude instrument just one year to a day prior to certain memorable tests at the Centennial that will be referred to later.

Graham Bell has stated that this accidental discovery convinced him of his error in being led to believe "that magneto-electric currents generated by the vibration of permanent magnets or reeds, would be too feeble to produce any useful practical results." And thus he immediately gave instructions for making this first of all telephones. He states that when the transmitter was ready, "I was anxious to try the instrument at once, and could not wait to have the duplicate receiver made, so I attempted to use it with one of my harmonic receivers. Upon passing a battery current through the coils of the instrument, however, the attraction of the magnet was so great as to tear the heavy armature away from the membrane."

Then other membranes were secured, pieces of iron were glued to them, and dispensing with the use of the battery current, the effort to transmit speech was again earnestly undertaken. These experiments were carried on in the factory of Charles Williams, Jr., 109 Court Street, Boston, where the first telephone was made. It was a very noisy shop with more or less vibration from heavy machinery constantly in operation; a place entirely unsuitable in which to experiment with an instrument so delicately responsive as the telephone. Arranging the crude instruments on the experimental line Graham Bell talked and shouted at the stretched membrane of the transmitter placed in the upper room while his assistant, Thomas A. Watson, was in the room down-stairs listening with his ear pressed against the reed of the harmonic receiver temporarily taken from the telegraph set. Graham Bell thus describes the occurrence: "I was interrupted by the sudden appearance of Mr. Watson who had rushed upstairs in a state of great excitement, and who declared that he had heard vocal sounds proceed from the instrument to which he had been listening, and that he could almost understand what was said. We then changed places, but I was unable to hear anything on that occasion. This inability I attributed at the time to the noise of the machinery in the work-shop, and to the fact that Mr. Watson (then about 21 years of age) was unable to throw out his voice with sufficient force to set the membrance of his telephone into good vibration."

While the results of these experiments were not all that might have been expected, they were sufficient to encourage Graham Bell not only to reconstruct his instruments, using heavier membranes and lighter armatures, but they convinced him that here was the tangible realization of his long-held theory of speech transmission.

Incidentally it may be added that in 1879, these reconstructed instruments were taken by a number of witnesses to the precise place in the work-shop where Graham Bell tried the originals in 1875, and no words could be made out. They were immediately taken to a quiet place and conversation was successfully carried on. Again, some of the membranes used in 1875 were made of sheepskin and others of gold-beater's skin. The articulation of the instruments having the latter was not so distinct, but the sheepskin membranes soon became damp by the action of the breath, and the articulation was then much less distinct.

June 28, 1875, he wrote: "Mr. Hutchins (the organ builder) kindly devoted the whole of this afternoon to the construction of a steel reed for me. One of the latest receiving instruments was inclosed in a wooden box and had its armature so arranged as to be set in vibration by a current of air passed through the box. The instrument was completed this evening in time for trial. Mr. Hutchins operated the reed in the little room upstairs (William's office) while I observed the effect upon a receiving instrument placed in the basement of the building. The sound was so perceptible that I found it unnecessary to place my ear against the instrument. The vibration of the armature could also be seen and felt. No battery nor permanent magnet was used." The impulses were generated through "the vibration of the armature acting upon the residual magnetism of the electro-magnet and armature," after the battery current was cut off.

July 1, 1875, Graham Bell wrote to Mr. Hubbard: "The experiment to which I alluded when I saw you last promises to be a grand success. On singing this afternoon in front of a stretched membrane attached to the armature of the electro-magnet, the varying pitch of the voice was plainly perceptible at the other end of the line, no battery nor permanent magnet being employed. When the vibrations are received upon another stretched membrane in place of a steel spring, it is possible, nay, it is probable that the *timbre* of the sound will be perceived. I hope to try the experiment to-morrow afternoon.

"This morning in dipping into a French work upon Telegraphy, I came across a full description of the Type-Telegraphe de M. Bonelli. I find it to be identical with our autograph arrangement, save that five telegraph wires are required instead of one for transmission."

August 14, 1875, Graham Bell wrote to Mr. Hubbard: "On glancing back over the line of electrical experiments, I recognize that the discovery of the magneto-electric current generated by the vibration of the armature of an electro-magnet in front of one of the poles is the most important point yet reached. I believe that it is the key to still greater things. The effects produced, though slight in themselves, appear to me so great in proportion to their cause that I feel sure that the future will discover means of utilizing currents obtained in this way on actual telegraph lines....

"I can see clearly that the magneto-electric current will not only permit of the actual copying of *spoken utterance*, but of the simultaneous transmission of *any* number of musical notes (hence messages) without confusion.

"The more I think of it the more I see that the method of making and breaking contact so many times per second, is only the *first stage* in the development of the idea.

"When we can create a pulsatory action of the current which is the *exact equivalent* of the aerial impulses, we shall certainly obtain exactly similar results. Any *number* of *sounds* can travel through the same wire without confusion, and any number should pass along the same wire.

"It should even be possible for a number of spoken messages to traverse the same circuit simultaneously, for an attentive ear can distinguish one voice from another, although a number are speaking together."

CHAPTER XXVII.

PREPARING THE PATENT SPECIFICATIONS.

The summer and autumn of 1875, was the most critical period in Graham Bell's life. Overwork and anxiety were breaking down his health, he was not only practically penniless, but had received and expended on his experiments the payment for lectures not yet delivered; yet he never lost faith in the greatness of his conception and the value his invention would ultimately be to mankind, notwithstanding the many discouraging assurances from eminent electricians and scientists, that while his admirable theory was perfect, it was extremely improbable that it would ever materialize into operative form. Intuitively he felt that the problem of speech transmission would ultimately be solved along the lines he was working, if not by himself, then by someone else, and he felt this so strongly that he would not give up striving to win the prize, though the struggle not only emptied his purse but was rapidly depleting his vitality. Referring to this period, Graham Bell said:

"In July, 1875, I resided in Salem, where I gave instructions for two or three hours a day to the little deaf pupil of whom I have before spoken. In the early part of that month I went to Boston every day, the journey occupying about one hour. I remained at my rooms in the Boston University for one hour or more according as I had pupils or not, and I devoted the remainder of my time within working hours to my electrical experiments. After six o'clock in the evening, after Mr. Williams' workshop closed, I either returned to Salem or received private pupils at my rooms in the Boston University. During the latter part of the month my visits became irregular on account of ill-health, and I only made the journey for the sake of carrying on my experiments, my professional work having failed me. About the end of July, the experiments were suspended on account of the illness of Mr. Watson, (typhoid fever), and when he had recovered I was in no condition to resume work. By about the commencement of August, my health had completely broken down, and during that month I rarely left Salem, excepting for an occasional visit to Mr. Hubbard's house in Cambridge. I made no experiments during this month, but occupied my time in thinking and pondering over the experiments that had been made in the preceding months. About the end of August or the first of September, I left Salem for my father's house in Canada....

"I went to Canada chiefly for the sake of my health. I spent a great portion of the time in the open air, taking plenty of horseback exercise. I had no means of making electrical experiments, but I attempted, as I found strength and inclination, to reduce to writing my ideas concerning the production and utilization of undulatory currents for the purposes of the speaking-telephone and the multiple telegraph. I also occupied a portion of my time in trying to interest friends in my inventions. I hoped to make some pecuniary arrangement for my support in Boston, so that upon my return to that city I might devote all my time to my electrical researches. It was my intention to patent what I had done at once, in the United States and abroad, and I thought that in return for an interest in my foreign patents I could induce some friend to make the arrangement I desired, and to undertake all the expenses of the foreign application. Before I left Canada I had arrived at an understanding of this kind with the late Hon. George Brown, of Toronto, and his brother Mr. Gordon Brown.

"Immediately upon my return to Salem in October, 1875, I prepared the specification for my patent of March 7, 1876, so as to be ready to make application for letters-patent in the United States and abroad, the moment a definite arrangement should be concluded with Mr. George Brown and his brother. Mr. George Brown had specially requested me to take no steps in America that could be prejudicial to the patents he proposed to take out abroad. I therefore waited anxiously for the definite reply to my proposition that had been promised, *but it never came.* In the meantime my time was occupied for two or three hours a day as before, with the instruction of my deaf pupil in Salem. Not hearing from Mr. George Brown I was soon placed in a serious dilemma. There seemed to be no alternative but to give up either my profession or my electrical experiments. I *could* not give up my profession and I *would* not give up my experiments. In regard to my professional work I was bound to deliver lectures in the Boston University, for which I had already received the payment, and the income from which had already been spent in supporting myself while carrying on my electrical researches. My little deaf pupil was my only means of support, and my instruction to him necessarily occupied a very considerable portion of my time, quite independently of the time required to travel backwards and forwards between Boston and Salem. In regard to my electrical work I could, of course, have made some arrangements with Mr. Sanders and Mr. Hubbard for my support while carrying on researches, but for the reasons already given I decided not to do so. There was another reason that powerfully influenced my decision at this time, namely: That I looked forward to the possibility of marriage. I knew from the past that if I attended properly to my profession it would be capable of yielding me an honorable support. On the other hand, I believed so firmly in the pecuniary value of my inventions that I was willing, and had offered, to risk everything by throwing professional work aside and devoting myself exclusively to the improvement of my apparatus if only Mr. Brown had acceded to my proposition....

"It was my belief that if the pecuniary arrangement I desired could be concluded with Mr. George Brown and his brother, that I could have repaid Prof. Monroe the money I had borrowed from him, and have been released from my obligation to lecture in the Boston University, for Prof. Monroe was not only a very dear personal friend, but was dean of the faculty to which I belonged. He knew something of my experiments and ideas, was interested in them, and would undoubtedly have done what he could to oblige me. Under existing circumstances, it was absolutely impossible for me to get along without attending to my profession; and it was difficult to see how I could do this without giving up my experiments. On the other hand I felt that even had I desired to do so, I was bound in honor to Mr. Sanders and

Mr. Hubbard to put my inventions to practical commercial use, so that they might be remunerated for the money they had already expended upon them.

"It will be understood then that in October, 1875, I was placed in a serious dilemma. I expected from day to day to hear from Mr. George Brown, and while waiting I occupied myself in writing and rewriting my specifications. I felt that I had made a great invention, that I had invented what is now known as the speaking telephone. I tried to embody this in my specification, and to express it in language that should be scientifically accurate and complete, and to the best of my ability I did so. I did not know much about the patent laws of the country, but believed that the counsel who might be employed by Mr. George Brown and his brother, or by Mr. Sanders and Mr. Hubbard, would make the necessary alterations in the phraseology, if any such alterations were deemed necessary. Mr. Hubbard and Mr. Sanders were very anxious to have my specification filed at once in the United States Patent Office, but I believed the invention to be so important and so valuable that I wanted it to be taken out abroad as well as in America, and, therefore, delayed the filing, hoping to hear from Mr. George Brown and his brother.

"Towards the end of October, 1875, when I began to despair of hearing from Mr. Brown, I was called upon to face the problem—What should I do?—and I came to the conclusion that the quickest way to get back to my electrical experiments was to devote my attention exclusively for a time to my professional work, and I formulated a plan which I thought would soon permit me to devote a very considerable portion of my time to the electrical researches, and yet allow me to hold my profession together as a contingent support for the future.

"My experiments in teaching articulation to the deaf had aroused a deep interest all over the country among those interested in the education of this class, and there was a great demand for teachers who were practically acquainted with my methods of instruction. It seemed to me that if this demand were to be made known it might enable me to form a large normal class of persons desiring to become articulation teachers, and that after a short time these persons would be competent themselves to teach. It would then be possible for me to relinquish into their hands the instruction of individual pupils, and thus allow me to devote the time that would otherwise be spent in this class of work, to the prosecution of my electrical researches, and to the improvement of the speaking telephone, so as to bring it into general commercial use.

"About the end of October (1875), or the commencement of November, I commenced to carry this plan into practical effect by lecturing at various Normal Schools upon the subject of articulation teaching; and some time in the early part of November I succeeded in gathering together a large normal class. I found the work involved a great deal more than I had expected. I had very few private pupils by whose instruction I could exemplify my methods of teaching, and I was, therefore, obliged to open a free class for the adult deaf-mutes of the city of Boston, which met in the evenings at my rooms in the Boston University. I addressed the different deaf-mute societies at some of their meetings, urging upon the members the advisability of their taking this opportunity, probably the only opportunity that would ever occur to them, of acquiring the art of speech. In response to my appeal quite a number of deaf-mutes made their appearance. I made a number of attempts, during November and December, to carry out my experimental work, but my private pupils began to increase in number, and I found that the work of organizing and arranging my classes and private pupils, according to the plan I have stated above, involved such an expenditure of time and such an amount of personal labor that it was not until somewhere about the middle of February, 1876, that I was enabled to carry out the plan in its entirety.

"Towards the end of November the expostulations of Mr. Hubbard and Mr. Sanders had their effect; we would no longer wait for Mr. Brown. In the early part of December Mr. Hubbard took my specification to Washington to have it submitted to his counsel there; but at my earnest request he promised that no steps should be taken in the United States Patent Office, until I had a last chance to interest friends in Canada, so as to have my foreign patents taken out simultaneously with my American patent. On account of the nature of my engagements this opportunity would not arrive until the Christmas vacation.

"In the meantime, as I have stated above, it was my intention to make another attempt during the Christmas vacation, to interest friends in Canada to take out foreign patents. I accordingly left Salem for Canada on or about the 24th of December, and returned about the first of January, having in the meantime concluded a definite agreement with Mr. George Brown and his brother. I could not, at that time, ask them for a cash payment sufficient to support me, as I was then carrying out the organization of my professional work in the manner stated above. I asked them, however, and they agreed to make me a sufficient allowance to pay the rent of special rooms in which the experiments might be carried on."

Referring to this period, Mr. Hubbard testified in 1879: "Nothing was heard from Mr. Brown for some time, and I was greatly annoyed at this delay in applying for the American patents, and finally offered to furnish the money for the foreign patents simply for the purpose of having our own patents applied for, intending to charge the expense to the American patents. taking no interest in the foreign one, as I did not believe any foreign patent would pay me for looking after it. Mr. Bell was unwilling to be under any pecuniary obligation to me, as he was then hoping to become my son-in-law, and finally promised that, if he could not obtain the money in any other way, he would borrow the money of his father.... I saw the specification of the speaking telephone in October, 1875. I believe it was substantially like the one for which the letters-patent were issued, though several changes were made in it, subsequent to my first seeing it. I believe I took it with me to Washington, in the first of December, 1875; I showed it to Mr. Pollock, brought it back with me on leaving Washington, December 14 or 15, then took it with me on my return to Washington, which was, I think, on the 10th of January, 1876, showed it again to Mr. Pollock, then I returned it to Mr. Bell for his signature and oath.... (In returning the specification to Graham Bell, Mr. Hubbard wrote: "I have been over your specification with Mr. Pollock. He is very much pleased with it, and says he thinks it will require no attention.") It was signed and sworn to in Boston, on January 20, 1876."

Mr. Hubbard gave the following reasons why the application was not immediately filed in the Patent Office: "I met Mr. Bell in New York about January 25, at his request to meet Mr. George Brown of Toronto. We met Mr. Brown and he agreed to take out letters-patent in Great Britain. Mr. Bell gave me his copy of the specification, which I was to take under a promise, which he exacted from me, that it should not be filed at Washington until Mr. Brown should have filed it in England. He did not hear from Mr. Brown as he expected, and finally wrote to me that if he did not hear by a certain day, that I might file it. I strenuously objected to the least delay, but it was of no avail, as he wished to have it taken out in his native country, that he might there have the benefit of what he believed a great invention."

As already stated, Graham Bell began to prepare an application for a patent in September or October, 1875. In composing the specification he "wrote and rewrote it a number of times, finally adopting that mode of expression which seemed to him the best to explain his invention and the relation which one portion bore to another." In December, 1875, it was submitted to his patent attorneys in Washington, was returned to him and again sent to Washington; then it was returned and signed and sworn to in Boston, on January 20, 1876; and "the part which describes and claims the speaking-telephone has never had a word altered since, either by change in the paper before filing or amendments afterwards." Then the application was "immediately returned to the attorneys. Afterwards Attorney Pollock met Graham Bell in New York, and the application was again gone over with care by the two together. No change whatever was made in it at that time and Pollock took it back with him to Washington."

CHAPTER XXVIII.

THE FUNDAMENTAL TELEPHONE PATENT IS GRANTED.

In the belief that his Canadian friends would surely take the action they had promised, the application completed in December and sworn to in January was held in the office of the Washington attorneys by direction of Graham Bell, until early on the morning of February 14, 1876, when it was filed in the Patent Office and was received in the Examiners' room before noon of the same day.

On the morning of the same day that the attorneys of Graham Bell filed his application for the fundamental telephone patent, Elisha Gray was in the offices of his patent attorneys in Washington, and there dictated to a stenographer the substance of a caveat based on a sketch he had conceived and made three days before, that is, three weeks after Graham Bell had signed and sworn to his complete application for a patent. The dictation commenced after ten o'clock, and when completed was transcribed in long-hand in formal phraseology by the stenographer. This transcription was then revised by Mr. Gray and attorney Baldwin, then rewritten in long-hand, and then sworn to. At two o'clock in the afternoon it was not ready for filing, but the fee for filing was paid, and the clerk noted on the fee ticket: "Paper will be filed later today." The document did not reach the examiners' room until the next day after Graham Bell's had been received.

Gray's document was not a complete specification for a patent, but merely a caveat, and therein he did not point out how his receiver could reproduce speech, because he did not know how speech could be transmitted electrically until taught by the text of Graham Bell's patent, which he studied after the remarkable demonstrations at the Centennial. The caveat des-

ALEXANDER GRAHAM BELL

(PHOTOGRAPH TAKEN IN 1876)

cribed "certain improvements in the art of transmitting vocal sounds telegraphically," and Mr. Gray claimed that: "It is the object of my invention to transmit the tones of the human voice through a telegraph circuit, and reproduce them at the receiving end of the line, so that actual conversation can be carried on by persons at long distances apart."

Later on, after a long and thorough investigation the Patent Office decided that: "It is prerequisite to the grant of a patent that it shall convey to the public the knowledge necessary to enable it to practice the invention, and it is just here that Bell and Gray differ. If Gray had obtained a patent for his instrument which he now says can transmit and reproduce speech, the public would not have been in anymanner enlightened as to this art.... When called upon to explain the construction of the apparatus thus ambiguously outlined in his caveat, Gray confesses that it was a general idea, not clearly defined in all its details, and based upon a theory which *has since proved to be false.* The instrument was never constructed by him."

Gray frankly admitted that after the remarkable tests at the Centennial, he tried for the first time to construct a telephone according to his own description in his caveat. But not succeeding in transmitting speech with his device, he dropped the subject for more than a year.

The reason for referring to this unpleasant subject here is that after stating that he "thought it would be impossible to make a practical working speaking-telephone on the principle shown by Professor Bell" at the Centennial, and then, after admitting verbally and in writing that Alexander Graham Bell had invented the electric-speaking telephone, and after publicly giving Bell "full credit for the talking feature of the telephone," Elisha Gray was induced to claim priority of invention by some men who hoped to profit by a competitive warfare, and felt "that some advantage or benefit might be derived from such a claim of priority of invention."

And through the duplicity of one of its examiners, even the United States Patent Office was unconsciously led to erroneously and momentarily favor Gray as against Bell in the following illegal manner. The patent law concerning interferences

Mr. Hubbard to put my inventions to practical commercial use, so that they might be remunerated for the money they had already expended upon them.

"It will be understood then that in October, 1875, I was placed in a serious dilemma. I expected from day to day to hear from Mr. George Brown, and while waiting I occupied myself in writing and rewriting my specifications. I felt that I had made a great invention, that I had invented what is now known as the speaking telephone. I tried to embody this in my specification, and to express it in language that should be scientifically accurate and complete, and to the best of my ability I did so. I did not know much about the patent laws of the country, but believed that the counsel who might be employed by Mr. George Brown and his brother, or by Mr. Sanders and Mr. Hubbard, would make the necessary alterations in the phraseology, if any such alterations were deemed necessary. Mr. Hubbard and Mr. Sanders were very anxious to have my specification filed at once in the United States Patent Office, but I believed the invention to be so important and so valuable that I wanted it to be taken out abroad as well as in America, and, therefore, delayed the filing, hoping to hear from Mr. George Brown and his brother.

"Towards the end of October, 1875, when I began to despair of hearing from Mr. Brown, I was called upon to face the problem—What should I do?—and I came to the conclusion that the quickest way to get back to my electrical experiments was to devote my attention exclusively for a time to my professional work, and I formulated a plan which I thought would soon permit me to devote a very considerable portion of my time to the electrical researches, and yet allow me to hold my profession together as a contingent support for the future.

"My experiments in teaching articulation to the deaf had aroused a deep interest all over the country among those interested in the education of this class, and there was a great demand for teachers who were practically acquainted with my methods of instruction. It seemed to me that if this demand were to be made known it might enable me to form a large normal class of persons desiring to become articulation teachers, and that after a short time these persons would be competent themselves to teach. It would then be possible for me to relinquish into their hands the instruction of individual pupils, and thus allow me to devote the time that would otherwise be spent in this class of work, to the prosecution of my electrical researches, and to the improvement of the speaking telephone, so as to bring it into general commercial use.

"About the end of October (1875), or the commencement of November, I commenced to carry this plan into practical effect by lecturing at various Normal Schools upon the subject of articulation teaching; and some time in the early part of November I succeeded in gathering together a large normal class. I found the work involved a great deal more than I had expected. I had very few private pupils by whose instruction I could exemplify my methods of teaching, and I was, therefore, obliged to open a free class for the adult deaf-mutes of the city of Boston, which met in the evenings at my rooms in the Boston University. I addressed the different deaf-mute societies at some of their meetings, urging upon the members the advisability of their taking this opportunity, probably the only opportunity that would ever occur to them, of acquiring the art of speech. In response to my appeal quite a number of deaf-mutes made their appearance. I made a number of attempts, during November and December, to carry out my experimental work, but my private pupils began to increase in number, and I found that the work of organizing and arranging my classes and private pupils, according to the plan I have stated above, involved such an expenditure of time and such an amount of personal labor that it was not until somewhere about the middle of February, 1876, that I was enabled to carry out the plan in its entirety.

"Towards the end of November the expostulations of Mr. Hubbard and Mr. Sanders had their effect; we would no longer wait for Mr. Brown. In the early part of December Mr. Hubbard took my specification to Washington to have it submitted to his counsel there; but at my earnest request he promised that no steps should be taken in the United States Patent Office, until I had a last chance to interest friends in Canada, so as to have my foreign patents taken out simultaneously with my American patent. On account of the nature of my believe that not a single person could have been found, however well versed in telegraphy or electricity, who would have given a hundred dollars for the patent within three months after its issue.... We very much doubt if it could now (1883) be purchased for $25,000,000. It is probably by far the most valuable single patent which has ever been issued."

When the fundamental patent was issued on March 7, 1876, the world learned for the first time how a certain effect of one of the forces of nature could be made useful, and how to make the apparatus and apply the method that would produce the desired results. And in all the intervening years no better method has been found, though no expense has been spared in the effort to solve the problem, and scientists, electricians, and mechanicians have vainly striven to find some other way, any other way, to electrically transmit speech over long distances.

In use on all telephone lines are certain devices not invented by Graham Bell, refinements or conveniences of system or method. But the broad fundamental method conceived by Graham Bell in 1874, underlies the electrical transmission of speech in any form and in any portion of the civilized world, while his means for speech-transmission still forms the essential portion of all telephone sets.

The form of the original crude telephone was improved by Graham Bell, and it was Graham Bell who substituted a metal for a membrane diaphragm. And twenty thousand of Graham Bell's magneto telephones, without any other man's improvements in them, were in commercial use before there went into public use any one of the many forms of variable resistance transmitters, each and all of which operate on the same method devised and described by Graham Bell in his specifications. And Commissioner of Patents Hall wrote: "The Bell specification is word for word the same as his patent. I have personally examined the specification, and find that it is written upon both sides of the paper in a clear fair hand, continuously from page to page."

And the Supreme Court of the United States decided that Graham Bell, "in his specification did describe accurately and with admirable clearness his process, that is to say, the exact electrical condition that must be created to accomplish his purpose, and he also described with sufficient precision to enable one of ordinary skill in such matter to make it, a form of apparatus which, if used in the way pointed out, would produce the required effect, receive the words, and carry them to and deliver them at the appointed place. The particular instrument which he had and which he used in his experiments did not, under the circumstances in which it was tried, reproduce the words spoken, so that they could be clearly understood, but the proof is abundant and of the most convincing character, that other instruments, carefully constructed and made exactly in accordance with the specification, without any additions whatever, have operated and will operate successfully. A good mechanic of proper skill in matters of the kind can take the patent and, by following the specification strictly, can, without more, construct an apparatus, which, when used in the way pointed out, will do all that it is claimed the method or process will do."

CHAPTER XXIX.

SCIENTISTS SHOW THEIR APPRECIATION.

Although he hesitated to take the time from his professional duties, Graham Bell presented to the members of the American Academy of Arts and Sciences, a resume of his experiments, under the title of "Researches in Telephony." He touched upon the experiments and the inventions of Gray and Reis, and the discoveries of Page, Marrian, Beatson, Gassiot, De la Rive, Matteucci, Guillemin, Wertheim, Wartmann, Janniar, Joule, Laborde, Legat, Poggendorff, DuMoncel, Delezenne, Ferguson, Paul la Cour, Helmholtz, Gore, Sullivan, and others, giving due credit to each. He made it clear to his hearers that the essential factor in this problem of speech transmission was not the devising of a definite form of instrument or tube, nor an apparatus having definite structural peculiarities, nor the combining of a certain number of parts into an operating whole. The solution of the problem was to so control the movements of the receiver diaphragm that its motions would exactly copy the vibrations of the transmitting diaphragm and thus set up a series of sound waves in the receiver exactly corresponding to those produced by the vocal organs. In other words, it was to so cause the electric current to flow that the receiver would not only reproduce a few or a majority or about all of the spoken words that impinged on the diaphragm of the transmitter in the form of sound waves, but would reproduce *each and all and every one* of the variations in articulation, with all their varying characteristics, whether expressed in lightest whisper, in slow, sonorous sentence, or in quick, abrupt remark.

Here the world of science received some of the details of a new method for the transmission of speech, learned of the creation of a new art and began to dimly perceive how great was this marvellous achievement modestly explained by this unassuming but enthusiastic young teacher; how the original and magnificent conception had been materialized into tangible, useful form, and how the masterly mind that perfected the theory was also able to devise a means that makes possible constant utilization of this method. Here the facts went on record, but so vast in its magnitude was this contribution to science that months elapsed before scientists were able to grasp all that it involved. Then they began to perceive that in the invention of the electric-speaking telephone, the simple combination of diaphragm and electro-magnet and undulating continuous current was the outgrowth of conception and perfected theory, and formed a practical materialization of both; that conception, theory, and apparatus were the honestly earned fruits not only of the inventor's "intellectual capacity and precision of thought," but of a thorough knowledge of the essential elements in each and every factor entering into the problem of the transmission of speech electrically.

Long afterwards the world learned how this remarkable knowledge was gained through long and patient research, through countless experiments, through financial expenditures that involved personal deprivations and hardships, and through discouraging criticism and bitter ridicule on the folly of wasting time and money in inventing a pretty but profitless scientific toy.

On Wednesday, July 11, 1877, Graham Bell and Mabel Hubbard were united in marriage at the home of her parents in Cambridge. A few days later the bridal couple left for England and a tour on the Continent, and did not return to this country until August, 1878.

In 1870, Graham Bell, then practically a penniless student, left London in search of health. Seven years later he returns with a lovely bride and is the recipient of many honors. For in 1876, Sir William Thomson (now Lord Kelvin) gave the telephone its meed of honor as a scientific achievement surpassing all else that he saw at the Centennial; while a few months later Mr. Preece displayed the first pair of commercial telephones received in England, having secured them from Graham Bell to show to the members of the British Association for the Advancement of Science at the Plymouth meeting.

In November, 1877, Graham Bell is presented to Queen Victoria and has the pleasure of personally explaining the mechanism of the telephone. Then her Majesty takes the receiver and listens to the songs that Miss Kate Field is singing at Osborne Cottage. On this Monday evening the Queen was entertained from half-past nine until nearly midnight with explanations and experiments and gave expression to her delight.

Twenty-two years previously and just after ascending the throne, Queen Victoria had enjoyed the pleasure of a so-called "telephone concert" given through an adaptation of Wheatstone's method of transmitting musical notes with the aid of a fine-grained wooden rod. But only musical notes were transmitted.

In this connection it is interesting to recall that as a result of his many experiments in the mechanical transmission of sounds during the years 1820-28, Wheatstone stated that on discovering "that sounds of all kinds might be transmitted perfectly through solid wires and reproduced in distant places, I thought I had the most efficient and economical means of establishing telegraphic (or rather telephonic) communications between two remote points that could be thought of .... Experiments on a large scale, however, showed me that the velocity of sound was not sufficient to overcome this resistance and enable it to be transmitted efficiently through long lengths of wire .... The transmission to distant places of a multiplication of musical performances are objects of *far less importance* than *the conveyance* of *articulations of speech*."

In 1823, Wheatstone explained how by means of a long deal rod he had connected a lyre in one room with another lyre placed in an upper room, and how when one instrument was played upon, the same strains were reproduced in the other instrument. This mysterious reproduction of music was a constant source of wonder to the public, who called the sounding instrument "the enchanted lyre." But Wheatstone christened it "the telephone," and thus coined a word now in daily use. Then in 1827 he coined the word "microphone," in describing "an instrument which from its rendering audible the weakest sounds, may with propriety be named the microphone." Wheatstone's musical "telephone" or "enchanted lyre" attracted so much attention that the editor of the *Repository of Arts* suggested in the issue of September 1, 1821, that the day may come when "the music of an opera (may be conveyed) like gas through snug conductors from the main laboratory of harmony to distant parts of the metropolis."

In his lecture before the Society of Arts in London, in November, 1877, Graham Bell referred to some of Wheatstone's "early telephonic experiments," as well as to all important experiments in telephony made prior to the conception of his theory.

While in London Graham Bell endeavored to have a handsome pair of telephones made for the Queen, but failing to secure what he desired, he wrote a letter to Thomas A. Watson, reading in part as follows:

> "Dear Mr. Watson: .... Mr. Williams would be quite flattered if he could only know how he has risen in my estimation since I came here, and how I appreciate, as I never did before, the kindness in giving me facilities for the execution of my ideas, and his good sense in forwarding, even at considerable trouble, the efforts of inventors, instead of discouraging inventions as much as possible. This brings me to the object of this letter, which is to request you to help me in developing some new ideas, and to ask you to have some work done for me in America. In the first place, we cannot have a decent telephone made in England—not even for Queen Victoria herself. I send you in despair the telephones made for Her Majesty, and ask you to make them work even respectably well, and reforward them here .... I cannot believe that ivory is any less suitable for telephonic purposes than ebonite, for its physical properties are the same, and I therefore send Her Majesty's telephones to you for your inspection."

Now a few words about the personality of the man and the esteem in which he was held during this period. The New York *Evening Post* of May 16, 1877, contains an interesting reference to his work, reading in part: "Professor Bell is a man of most genial and kindly presence, so courteous and gracious in manner that you could not feel yourself an intruder though you chanced to drop into his room when some private class was under special training. At the same time though his affability sets you at ease, you could not fail to observe that he is one of the busiest of men, so intent upon the development of the plans which occupy his life that he has no leisure for visitors who are not interested in his work. He is young, apparently not more than five and thirty (he was just thirty), with an unusually prepossessing countenance, very happy in its expression; of pale complexion, with jet black hair brushed up from his forehead, and pleasant, sparkling black eyes—the face of a man all engaged in his work and finding satisfaction in it."

Another estimate of Graham Bell's personality by Philip R. Fowle reads: "The immense popularity the great inventor attained among all classes—scientists, business men, and particularly, his deaf-mute scholars—while teaching in the Horace Mann School at Boston, is a fair index to the lovable character of the man. Of the industry, cheerfulness, patience, and loving interest in the welfare of his afflicted pupils, tales without number are told, and it was due as much to these attributes as to any other one thing that his brother scientists so spontaneously proffered him the aid of the deductions they had drawn from experiments along lines similar to the ones he was following."

That Graham Bell appreciated this kindly feeling that was prevalent among those with whom he came in contact in the days when discouragement and derision appeared to be the only reward the future held in store for him, is shown in his public expressions gratefully acknowledging the assistance so generously rendered. On several occasions he publicly referred not only to the personal generosity of Professor Lewis B. Monroe, but to his nobility of character, and to the fact that by reason of his professional ability "every articulation teacher, whether a teacher of the deaf or a teacher of the hearing, should remember with gratitude the labors of Professor Monroe."

In addressing the Society of Telegraph Engineers, in London, on October 31, 1877, Graham Bell said, in naming certain friends: "And here I wish to express my indebtedness to several scientific friends in America for their co-operation and assistance .... The very honorable way in which they from time to time placed before me the results of their discoveries entitles them to my warmest thanks and to my highest esteem. Professor Pierce was the first to demonstrate the extreme smallness of the magnets which might be employed."

Again when telling the members of the American Association for the Advancement of Science that he and Sumner Tainter had demonstrated that "without the use of a conducting wire as in electric telephony, we can speak from station to station, wherever we can project a beam of light," Graham Bell said: "I am extremely glad that I have had the opportunity of making the first publication of these researches before a scientific society, for it is from scientific men that my work of the last six years has received its earliest and kindest recognition. I gratefully remember the encouragement which I received from the late Professor Henry, at a time when the speaking telephone existed only in theory. Indeed, it is greatly due to the stimulus of his appreciation that the telephone became an accomplished fact. I cannot state too highly, also, the advantage I derived in preliminary experiments on sound vibrations in this building from Professor Cross, and near here from my valued friend Dr. Clarence J. Blake. When the public were incredulous of the possibility of electrical speech, the American Academy of Arts and Sciences, the Philosophical Society of Washington, and the Essex Institute of Salem, recognized the reality of the results and honored me by their congratulations. The public interest, I think, was first awakened by the judgment of the very eminent scientific men before whom the telephone was exhibited in Philadelphia, and by the address of Sir William Thomson before the British Association for the Advancement of Science. At a later period when every practical telegrapher considered the telephone as a mere toy, several scientific gentlemen, Prof. John Pierce, Prof. Eli W. Blake, Dr. Channing, Mr. Clark, and Mr. Jones of Rhode Island, devoted themselves to a series of experiments for the purpose of assisting me in making the telephone of practical utility, and they communicated to me from time to time, the results of their experiments with a kindness and generosity I can never forget. It is not only pleasant to remember these things and to speak of them, but it is a duty to repeat them, as they give a practical refutation to the often repeated stories of the blindness of scientific men to unaccredited novelties, and of their jealousy of unknown inventors who dare to enter the charmed circle of science."

CHAPTER XXX.

WEALTH AND PERSONAL SERVICE DEVOTED TO WORLD BENEFACTIONS.

With the awakening of a general interest in the commercial value of the telephone came honors and wealth far beyond all that the inventor ever dreamed of, and assuring a future of comfort and ease and pleasurable idleness. Yet never was Graham Bell diverted from his determination to devote his life to advancing the educational welfare of deaf children, a joyous labor of love that his cherished wife has gladly aided him in promoting during thirty years of wedded happiness.

Six years of broadest experience in teaching teachers of the deaf, in studying methods then in vogue in the leading institutions for the deaf, and in giving speech to private pupils, had enabled him to gain a clear conception of the injustice in the prevailing treatment of deaf children, a cruel wrong unrecognized or ignored by many leading educators whose approval of these fallacious methods was upheld by the general public, and to appreciate the merits inherent in the oral method as pursued by Miss Rogers, Mr. and Mrs. Hubbard, and Miss Fuller.

Directly contrary to the accepted teachings of many old-time instructors of the deaf Graham Bell held that in all our relations with deaf children we should strive to forget that they are deaf, thoughtfully encourage them to forget it, and to understand that this infirmity need make no difference in winning success in a chosen career; that we should teach them speech and speech-reading, and should speak to them naturally and with the same voice that we speak to other people, being careful not to make artificial distinctions in the mouth by exaggerated movements that would distort the natural appearance of speech. To the deaf child even imperfect speech had an immeasurable value when compared with the gestural language. For "the child who has been taught to speak not only has all the advantages that those who are educated by signs or the manual alphabet have, but he can read and write as well as they can, and in addition to all that, he can speak, and those who have acquired the art of understanding the speech of others have closer companionship with hearing people; and the great aim of education is to bring the deaf child into more close contact with the hearing in order to restore them to society."

Not only in indirectly aiding the deaf child to converse readily, but also in broadening the scope of its mental powers, Graham Bell held that the deaf child can form no habit more important than that of reading. For, as he says: "After all, the utmost that you can do for his education in his school life is to introduce him to the wider literature of the world .... I would have a deaf child read books in order to learn the language, instead of learning the language in order to read books .... We should place in the hands of the child such books as are of absorbing interest to hearing children of his age. If we wish the child to learn language, quantity of reading is more important than quality .... I believe that in the acquisition of language by the deaf, reading will perform the function that hearing does for the ordinary child."

Graham Bell believed that the education of the deaf should begin in infancy, just as the hearing child's does, and along the same lines; that the teaching of speech and speech-reading should be the aim of all instructors of the deaf, and that every facility should be afforded the deaf child for securing the highest mental development and free intercourse with hearing and speaking people.

Though strongly combatted for many years prior to the opening of Miss Rogers' school, these views are now approved by all progressive educators. Yet they did not originate wholly with Graham Bell, but substantially were advocated two hundred years ago in an admirable treatise upon the education of the deaf, written by George Dalgarno, a Scotch tutor in Oxford, and which was reprinted in the *American Annals for the Deaf* in 1857. In 1888 Graham Bell told the members of the Royal Commission the use he had made of Dalgarno's principles, beginning in 1872, and how this "good old Scotchman was a man of gigantic intellect in his day, and when you consider that his treatise was written about the year 1680, before the deaf were educated at all, you will be surprised at the clear ideas that he has. If I have any ideas of value about language teaching I give the credit to Dalgarno."

Because of his breadth of view, and his willingness to generously discuss all differences of opinion, and because he kept his mind in a receptive mood and devoted the greater portion of his valuable time to intelligent continuous research and experiment in ascertaining what methods were best adapted for the mental improvement of the deaf child, Graham Bell naturally became the lay-leader towards whom progressive minds in both laity and profession turned for inspiration and guidance. Then his strong desire to rise above all that was erroneous or detrimental in method and practice, even though sanctioned and approved during many years, was admirably shown a quarter of a century ago in his remarks when the convention was discussing the need of a normal training school for teachers of the deaf. In part he said: "I think that this subject is the most important one that has been brought to our consideration. The success of articulation teaching in America will depend upon the teachers. Where are the teachers? Our teachers are all fully engaged. Where are we to get more? Where are they to get sufficient training? .... I do not like the isolation of teachers of the deaf from teachers of the hearing .... Any training college specially for the deaf would lead to uniformity in our methods of teaching. I do not believe that uniformity is a good thing. I would rather see diversity; a healthy difference of opinion is what makes progress: the discussion and discovery of errors. From errors we advance, and by the discussion of our errors we improve."

Again he said: "I look upon the diversity of opinion at present existing among teachers as a healthy sign. To my mind it is extremely unlikely that any of us are wholly right. Let us look upon all teachers of the deaf as our friends, whatever may be the system of education they advocate. Let us believe that they are honestly as anxious for the good of their pupils as we are; and that they will be ready to join hands with us in favor of articulation teaching, the moment we can convince them of the practicability of our ideas. Let us labor to bring about a public and impartial comparison of the results of the different systems of education, and then the friendly competition of rival methods will surely end by the survival of the fittest."

In 1884, Graham Bell went before the National Educational Association and made his memorable plea for the opening of day-schools for the deaf, a proposed departure from existing methods of educating deaf children, so radical as to lead to thorough discussion. He contended that the boards of education in all centers of population should establish day-schools for the deaf, and that classes for deaf children should be formed in public schools. Thus deaf children could live at home and receive their education like ordinary children. Then he again earnestly urged " the abolition of the sign-language in our schools for the deaf, and the substitution of the English language in its written and spoken form, (for) the use of the sign-language is the main difficulty in the way of the acquisition of the English language by the deaf."

In discussing the subject of day-schools for the deaf, before the members of the Board of Education of the City of Chicago, on July 20, 1884, Graham Bell held that "an uneducated deaf-mute may become a dangerous member of society, and society has therefore the right to demand, as a matter of self-protection, that deaf children shall be educated; but society has no right to demand the compulsory separation of a deaf child from its parents unless it can be clearly shown that the education of the child necessitates removal from home. It is therefore the duty of the state to establish day-schools for the deaf wherever possible. If this were done, the present institutions would be sufficient to accommodate all who could not attend day-schools."

On February 15, 1885, in his advocacy of legislative action in behalf of day-schools for the deaf, Graham Bell stated that "the nearer the school approaches to the home of a child the less likelihood is there that he will escape instruction. Little by little, as the measure is put into operation, new centres of instruction will arise, each radiating its influences into the neighboring places, so that ultimately the benefits of the bill will reach into every nook and corner of the state. The multiplication of small schools upon diverse plans renders it possible for the first time in the history of the country to settle by a natural process the disputed points concerning the education of the deaf. A single state school with an established method of instruction, like an established religion, tends to intolerance. A number of small schools depending for life upon the results produced, is favorable to progress."

Fourteen years later he again went before the National Educational Association and after briefly showing the progress that had been made in devising improved methods of teaching deaf children, said: "In the last few years we have had a new policy whereby the State furnishes decentralization in the instruction of the deaf, combining day-schools with the central institutions, so that children can be reached at a younger age in the day-schools and in small numbers; and those who cannot attend the day-school have the State institution to go to. All deaf children cannot attend the day-schools, all deaf children cannot go to the institutions or boarding schools. We should have both; the day-school moving out into the smaller centres of population, taking in children at a younger age than they could be received into an institution...."

Then he repeated his former arguments that for economic reasons the new policy was not only the wiser but the more profitable one for the State, for "the deaf child is born among hearing and speaking people," and must live its life among them. Therefore it should receive that form of education which would best prepare it to make a living, and thus render it independent instead of tending to become a burden on the community.

Lack of space renders impossible even the most brief mention of all the meritorious services that Graham Bell has rendered to humanity while striving to promote the educational welfare of deaf children. But there are three that deserve the highest recognition by reason of the immeasurable influence each has exerted in modifying methods and arousing a broadening interest in this work:

First, the scholarly address in which he commended to scientific minds the question whether there was not grave danger of the formation of a deaf variety of the human race.

Second, his masterly presentation to the members of the Royal Commission of the necessity of eliminating the elements of segregation and the sign-language in the education of deaf children, of commencing their instruction in infancy the same as hearing children, and of establishing day-schools to the end that the home or normal environment, with all its advantages, might be retained, thus insuring to the deaf child the greatest possible intercourse with hearing children.

Third, his voluntary contribution of six years of strenuous labor to provide a correct report of the condition of the deaf for the census of 1900, and one that would serve as an authoritative standard for all future researches.

On November 13, 1883, following several years of diligent research, Graham Bell read his now often quoted memoir "Upon the Formation of a Deaf Variety of the Human Race," before the members of the National Academy of Sciences, at New Haven, Conn. Therein he showed that the "numbers of non-congenitally deaf are evidently subject to great and sudden fluctuations on account of epidemical diseases which cause deafness, whereas the growth of the congenitally-deaf population seems to be much more regular; the indications are that the deaf-mutes of the country are increasing at a greater rate than the population at large; and the deaf-mute children of deaf-mutes at a greater rate than the congenital deaf-mute population .... that we have, here and there, scattered over the country, groups of *deaf-mute families* connected together by blood and marriage."

Then he presented statistics indicating that this unfortunate condition of affairs was traceable to the fact that "of the deaf-mutes who marry at the present time, not less than eighty per cent. marry deaf-mutes."

Quoting from the annual reports of six leading institutions for the deaf, Graham Bell showed that of 2,262 pupils who were "congenitally deaf-mutes, more than one-half, or 54.5 per cent., had deaf-mute relatives; and that even in the case of those pupils who became deaf from apparently accidental causes, 13.8 per cent. had other members of their families deaf and dumb; and that of 1,089 pupils of five institutions, 856, or 78.6 per cent. had married deaf-mutes .... (that) a hereditary tendency towards deafness, as indicated by the possession of deaf relatives, is a most important element in determining the production of deaf offspring."

And he surmised that this tendency "may even be a more important element than the mere fact of congenital deafness in one or both of the parents."

Graham Bell offered no objection to the deaf marrying, so long as they were careful to mate with hearing persons having no deaf relatives. For he realized that "there is no subject on which a man will so little brook interference as one of this kind where his affections are involved." Yet so long as reliable statistics indicate that "the liability to the production of congenital deaf-mutes is nearly twenty times that of the population at large," he earnestly advocated such sensible action as would lead deaf-mutes to associate with, and especially to marry hearing persons having no deaf relatives.

Concerning the causes that promote intermarriage among the deaf, he held that this lamentable condition of affairs was largely due to the unfortunate system of education adopted by many institutions for the deaf, and added: "indeed if we desired to create a deaf variety of the race, and were to attempt to devise methods which should compel deaf-mutes to marry deaf-mutes, we could not invent more complete or more efficient methods than those that actually exist and which have arisen from entirely different and far higher motives .... Segregation really lies at the root of the whole matter; for from this the other causes have been evolved by the operation of the natural law of adaptation to the environment .... The grand central principle that should guide us, then, in our search for preventive measures should be the retention of the normal environment during the period of education. The natural tendency towards adaptation would then cooperate with instruction to produce accommodation to the permanent conditions of life."

Graham Bell then offered the following suggestions of a remedial and preventive character: "The direction of change should therefore be towards the establishment of small schools and the extension of the day-school plan .... (and) the advisability of coeducation with hearing children .... The average *per capita* cost of the education of a deaf child in an American institution is $223.28 per annum. Very small day-schools could be maintained at no greater cost .... The indications are that in all places where three or four deaf children could be brought together near their homes the cost would be no more to form them into a class in the nearest public school building under a special teacher than to send them to an institution."

Furthermore, he strongly asserted that "segregation during education has not only favored the tendency towards the formation of a race of deaf-mutes but has led to the evolution of a special language adapted for the use of such a race—'the sign-language of the deaf and dumb.' This is especially true in America where the sign-language is employed by a large majority of the teachers in instructing their pupils. In foreign countries the vast majority employ, for this purpose, the ordinary language of the people."

Naturally these radical views were widely discussed, often erroneously commented upon, and frequently cruelly criticised. But expediency had no part in Graham Bell's mentality. From his point of view there was a far higher potency in accurate research, in truthful portrayal of actual results, and in logical reasoning than in caustic comments. Right and truth are eternal; captious criticism is ephemeral. He treated all his critics in a frank openhearted manner that won their admiration for his intelligent enthusiasm, even if belief was not always speedily modified.

Replying to one criticism of his views, in 1883, Graham Bell briefly reiterated his teachings of the previous five years, as follows: "I believe that we should aim at giving the deaf in childhood as nearly as possible the same environment they should have in adult life. Bring them together only in small numbers in the midst of hearing children in large numbers. Bring the deaf together as little as possible and only for the purpose of instruction. After school-hours separate the deaf children from one another to prevent the development of a special language, and scatter them among hearing children and their friends in the outside world."

Early in 1888 Graham Bell received an invitation to appear before the Royal Commission appointed by the British Government to inquire into the condition of the deaf. This committee was in session at divers periods for several years, and endeavored to obtain the opinions of the best informed teachers of the deaf of many schools and in many lands. Prior to sailing for England he mailed a circular letter of inquiry to the superintendents and principals of all schools for the deaf in the United States and Canada, explaining the character of the information the Commission desired, enclosing a blank form for reply and requesting prompt co-operation to the end that American methods and prevailing beliefs might be justly presented, and adding: "I shall also be glad to have you communicate any facts relating to the instruction of the deaf which you think would be of value to the Commission, and it will give me pleasure to lay your views before the members." Replies were received from officials of sixty-four institutions, and these together with communications from experts and scientists, and with some valuable tables were printed in a book of about two hundred pages at Graham Bell's expense, copies of which he presented to the members of the Commission and others. In this book seventy-five pages were devoted to a reprint of the views expressed by superintendents and principals of American and Canadian schools concerning the proper instruction of the deaf, sixty-five pages contained opinions and statistics relating to intermarriages of the deaf, while the remaining pages were devoted to methods employed to develop latent hearing power, the serviceability of Visible Speech, etc.

Graham Bell appeared before this Royal Commission on four days, June 14, 21, 22, and 26, and replied to more than six hundred questions, his testimony covering some sixty large octavo pages. He plainly showed the necessity and the justice of making it possible for every deaf child to receive from competent and well paid teachers thorough instruction in speech and the reading of speech from the lips of the speaker, for the benefit of the race if not for the individual. "Speech for all; speech-reading for as many as can readily profit by it" was his motto. He perceived the rank injustice to both the individual and the race in using as a means of communication and instruction a language of signs unknown to all but its users, and which led the deaf children so instructed to think and converse and live in a language foreign to relatives and friends. He presented statistics in support of his contention that "the whole question of the education of the deaf is the question of language teaching." And he hoped that "the moral sentiment of society in the future will be such that it will be considered a crime to deprive a human being of the power of articulate speech by neglecting to instruct him in the use of his vocal organs."

In presenting statistics showing that the ratio of increase of the congenitally deaf exceeded the growth in population, Graham Bell held that in the beginning the first error made by philanthropists was in taking deaf children from their homes and from association with hearing children, and that through this segregation was evolved the sign-language, a means of communication which prevents or hinders the acquisition of English as the vernacular, thus barring its users from association with the hearing and forcing them to seek companionship among those similarly instructed, and to marry one another. His statistics showed that of a total of 1,443 deaf-mutes reported to have married, 1,372, or 95 per cent. married deaf-mutes. And he added: "It is absolutely certain—it is no question for argument or opinion—that of the deaf who have married there has been a constantly increasing number who marry deaf-mutes, until now they nearly all marry deaf-mutes, and of those who marry hearing persons, in the majority of cases the hearing persons are the brothers and sisters of deaf-mute friends."

Referring to the use of a gestural medium of communication, Graham Bell said: "I admire it as much as any teacher of signs can do; and yet I think it is a mistake to use it in the education of the deaf .... The proper use of signs is to illustrate language, not to take its place .... I believe there is only one royal road to the learning of a language, and that is to use it for the communication of thought without translating it into any other language. The moment you teach one language through another the pupil thinks in the one language and translates into the other. You must use the language without translation .... While I admit that the use of a sign-language might *start* the mind of a deaf child more quickly than the other methods, the mental improvement is not continued but retarded as time goes on; for printed literature through which alone much advancement can be gained, is in another language (the English language), and he cannot profit fully by this until he has ***unlearned the language he first acquired***, so as to be able to think in English."

Regarding the better method of teaching children born deaf, Graham Bell said: "I would have the teacher use written language, and I do not think that the manual alphabet differs from written language, excepting that it is more expeditious .... I would permit the pupils in every school to know and use a manual alphabet. I would not permit the use of the sign-language.... I believe that for the congenitally deaf written language should form the basis, because it is clearly differentiated to the eyes; it is perfectly distinct and perfectly clear, and I think (when necessary) it should be supplemented by the use of the manual alphabet, for we want that method, whatever it is, that will give us the readiest and quickest means of bringing English words to the eyes of the deaf, and I know of no more expeditious means than a manual alphabet .... I believe from the experience I have had that there is a time to teach a child a thing, and that you may teach a child a thing prematurely .... The spoken language presented by word of mouth, what we term speech-reading in America, reading from the mouth, every child who has a knowledge of language can acquire; but I think that with the congenitally deaf to commence their education by speech-reading, to commence to have the child read words from the mouth, *before he knows the language*, interferes with his mental development, retards progress in the acquisition of language, and thus defeats its own end, and retards the acquisition of speech-reading itself. When you look at the mouth of a person so as to read from the mouth, you find that the elementary signs or positions are not clearly differentiated to the eye .... *Context differentiates the ambiguous words one from the other.* It follows from this that those who have sufficient knowledge of the English language to be able to judge by context become good speech-readers, but those who have not do not, and speech-reading alone will not give them the knowledge. Those who could speak before they became deaf have that knowledge naturally. The congenitally deaf must first be given it artificially .... The method I would advocate for teaching a congenitally deaf-mute would be that method by which you could produce the greatest number of repetitions of words to the eye, distinctly and clearly in a given time .... I say there is great hope for the deaf in giving them a knowledge of language by accustoming them to form the habit of reading .... Ordinary books, like books of history, Stanley's Travels, and so on, do not give the language of the people, it is book language; but novels and plays are the books that will facilitate the acquisition of language and stimulate the pupil to read. If you make a deaf child perforce every day, as a regular school exercise, read over, not a few paragraphs of a book, but many pages, he will gradually learn language; he gets the repetition of words to the eye that the hearing child gets to the ear. A hearing child has constant repetition of words to his ear for two years before you expect him to express himself in words. A deaf child should have constant repetition of words to his eye before you call upon him for any great exercise in English composition. I would, therefore, have a child read books in order to learn the language, instead of studying the language in order to read books."

In some respects certain wealthy men might have proven as successful benefactors of deaf children as Graham Bell, the inventor of the telephone. But who can measure the value of his personal services? Of his time and his abilities he has given in unstinted measure without thought of compensation other than the satisfaction of a duty well done. And there is where the immeasurable value of his services will loom the larger with the passing of time. For what bears his signature is as authoritative as it is possible for human effort to make it.

The world counts Graham Bell a millionaire. Yet with all his wealth, simply as a labor of love, he hesitated not, in addition to his many other time-absorbing researches, to devote a large portion of six years to the most trying, most difficult, and exacting work, in order that his country might have an accurate census report relating to its deaf. And the result: A government report such as the future will rarely see. It is a monumental work that will serve as the starting point for all statisticians when compiling data concerning the deaf in America.

Not only did Graham Bell initiate the enquiries used by the enumerators, and supervise the vast correspondence incident to their returns, but he "determined the scope of their investigations and specified the tabulations to be made from the data secured" for the Twelfth Census. Then he outlined the many graphical diagrams that bring out "clearly in relief the really salient features of the tables."

Moreover, long before the enumerators were appointed, Graham Bell, as chairman of the Census Committee of the American Association to Promote the Teaching of Speech to the Deaf, was instrumental in influencing Congress to amend the act providing funds for taking the Census, so as to permit of a full enumeration of all the deaf, instead of the returns being restricted to the deaf in institutions only. The Director of the Census and the members of the House were in sympathy with the movement and actively co-operated, but only after unceasing efforts on his part did the Senate acquiesce. Then the Government appointed this millionaire inventor an expert special agent of the Census Bureau in order that he might be in a position where he could authoritatively supervise the collecting of the necessary statistics relating to the deaf living on June 1, 1900. And it is unnecessary to add that Graham Bell not only made every possible effort through correspondence or otherwise to eliminate all that appeared erroneous in the returns, and to secure such additional information as would insure correct tabulation under specialized as well as general headings, but he also bore the entire expense incurred in gathering data for which the Census appropriation was no longer available.

Thus, whilst the unremitting labors of Graham Bell have secured to mankind *the invaluable benefaction of the electrical transmission of speech over long distances, they also coincidentally, have insured to future generations of the deaf in America, the boon of speech and the blessedness of being no longer dumb.*

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